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Southern Medical Journal

Journal of The Southern Medical Association

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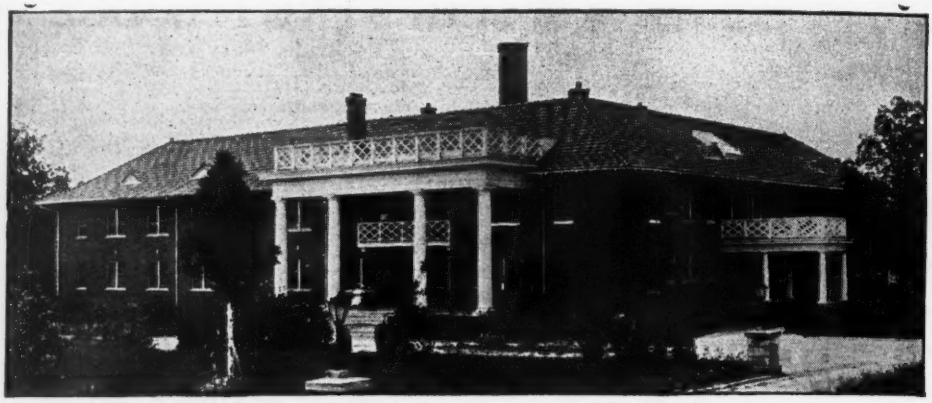

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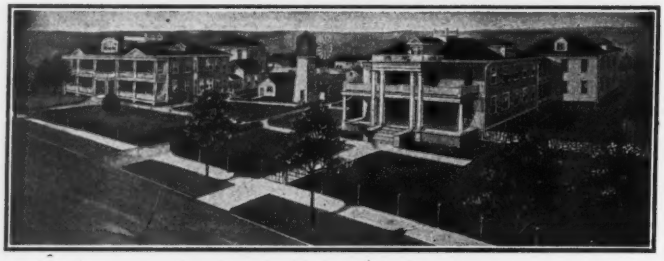

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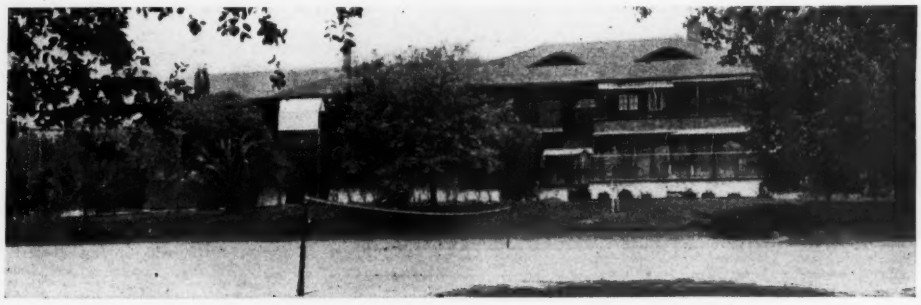

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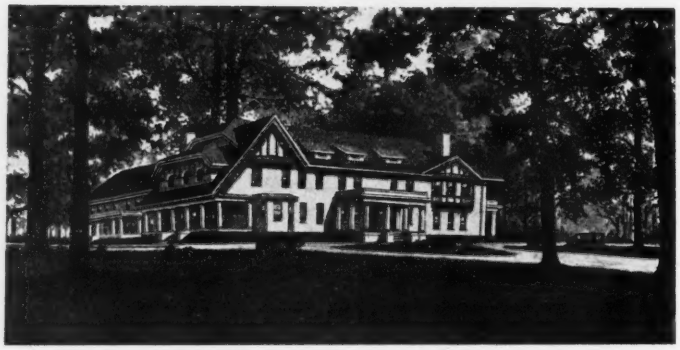

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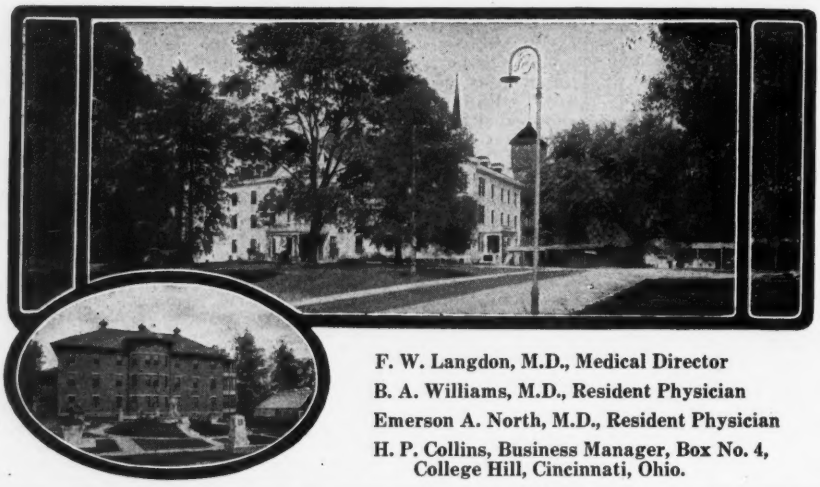

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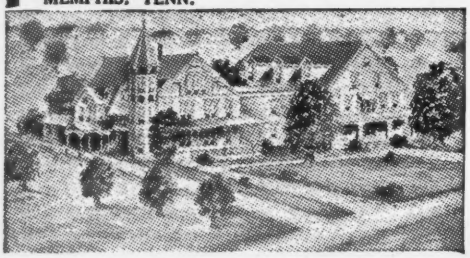

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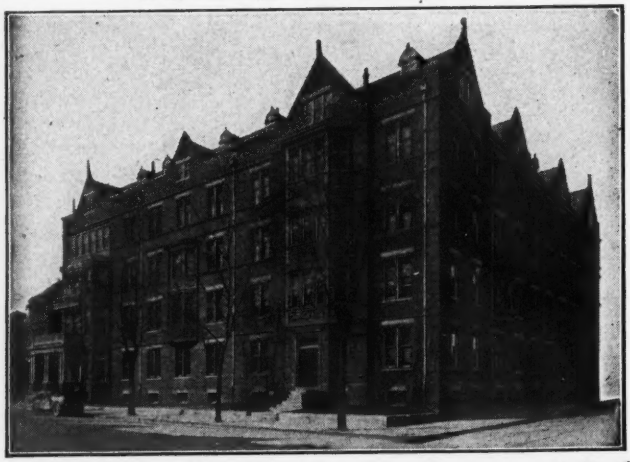

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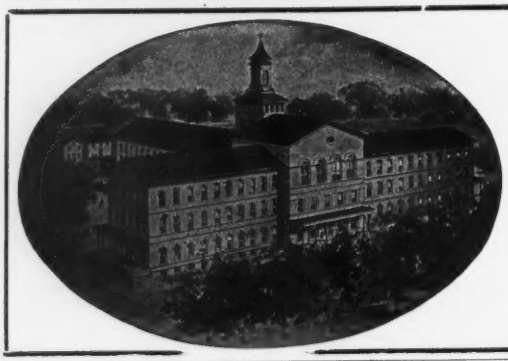

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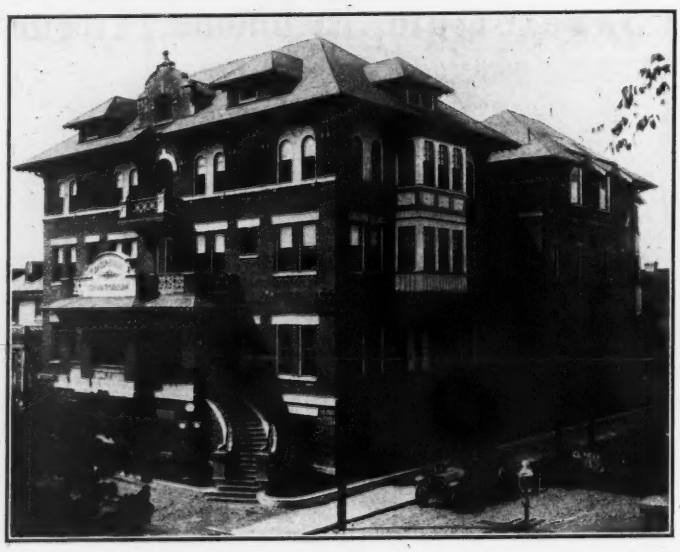

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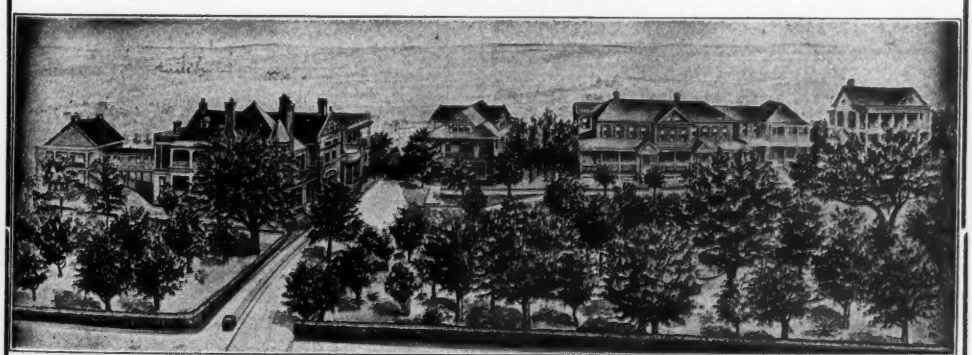

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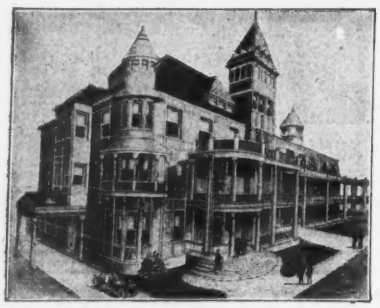

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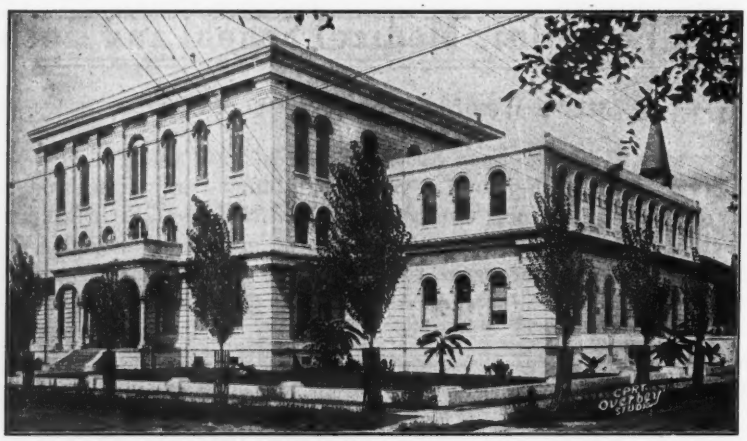

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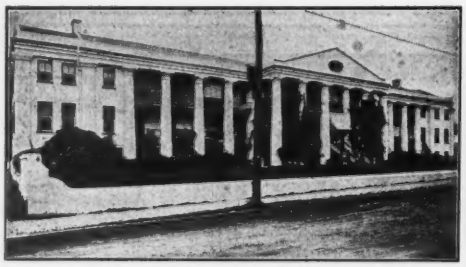

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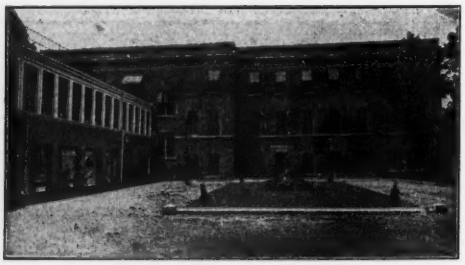

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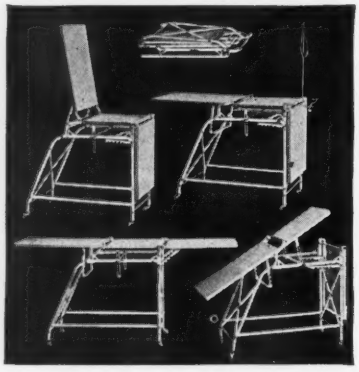

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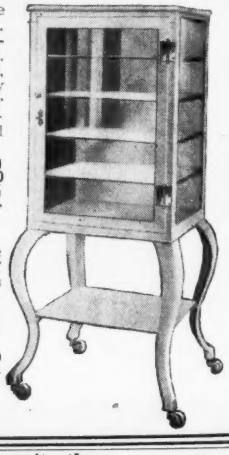

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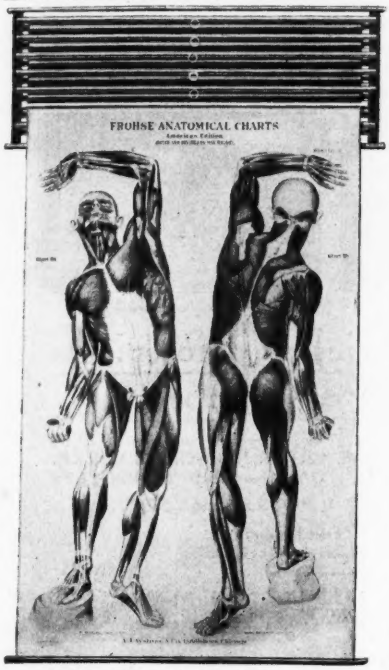

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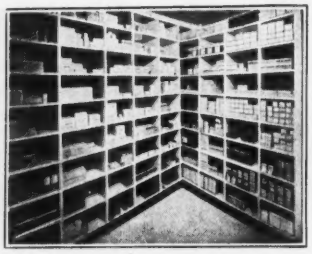

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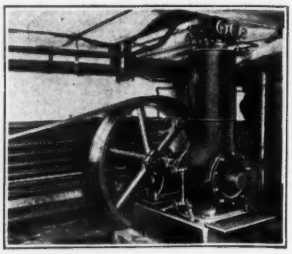

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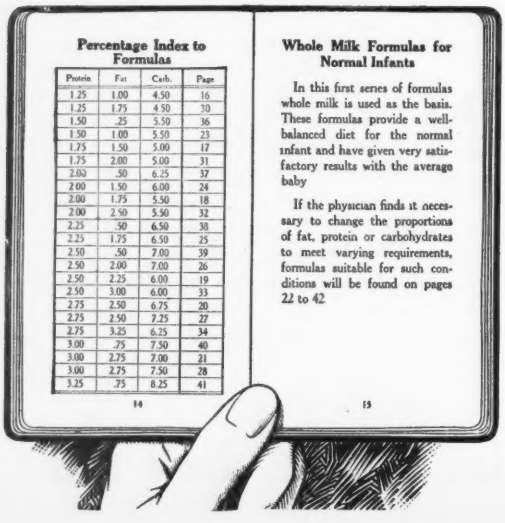
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SOUTHERN MEDICAL JOURNAL

JOURNAL OF THE SOUTHERN MEDICAL ASSOCIATION

PUBLISHED MONTHLY AT BIRMINGHAM, ALABAMA

Volume XI | MAY 1918 | Number 5

MEDICINE

INTERNAL DISEASES, PEDIATRICS, NEUROLOGY, DIAGNOSTIC METHODS, ETC.

THE USEFULNESS OF BLOOD CHEMICAL METHODS IN THE DIFFERENTIAL DIAGNOSIS OF CARDIAC AND RENAL DISEASE*

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and
CARL POWELL, M.D.,
Resident Physician, St. Louis City Hospital,
St. Louis, Mo.

The literature of the past few years has called attention to the definite assistance that has been derived in diagnosis, prognosis and treatment of various disturbances of the kidneys by means of the newer methods of blood chemical analysis that were initiated in this country. American medicine may justly be proud of the epoch-making work of Folin, Benedict, Van Slyke, Mosenthal, Chace, Lewis, Shaffer, Epstein, Marriott and others,—men who have contributed methods which time and trial have proven efficient and reliable in estimating some of the most important metabolic changes in the human body in health and in disease. These methods, which have been designated "micro-chemical methods," are mainly colorimetric in the last analysis, namely: estimations by means of color development in the unknown, as compared with color development from known standard solutions. We refer more particularly to the estimation of the non-protein nitrogenous blood constituents, which are urea nitrogen, uric acid and creatinine and sugar. Since the standardization of these tests, much research work has been done; biological chemists have worked hand in hand with clinicians to the end that certain definite deductions can be drawn from specific alterations in these blood constituents, notably in nephritis and gout and diabetes mellitus. We have proven that an accumulation of these ingredients occurs in various forms of nephritis, particularly in the type known as "chronic interstitial nephritis." The normal percentages of these ingredients in healthy adults are as follows: uric acid, 1 to 2 mgms. per 100 c. c.; urea nitrogen, 12 to 15 mgms. per 100 c. c.; creatinine, 1 to 20 mgms. per 100 c. c.; sugar, 0.08 to 0.12 %. It has been shown that in beginning cases of chronic interstitial nephritis we have, first, an accumulation of uric acid, then an accumulation of urea nitrogen, and finally an increase in creatinine. There is often, too, a concomitant increase in sugar in the nephritic conditions. In the nephritides of the parenchymatous type we may have accumulations, but usually not so high as the interstitial variety except in terminal stages. A great deal of work has been done upon the value of these blood chemical methods in determination of the type of nephritis, operative risk in surgery, the differential diagnosis between gout and rheumatism, hyperglycemia in diabetes mellitus, prognosis in nephritis, and other

*Read in Section on Medicine, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., November 12-15, 1917.

important metabolic considerations in respect to creatinine accumulations.

Our present purpose is to call attention to the value of these methods in a most important clinical problem that frequently arises,—one that has taxed the diagnostic acumen of many clinicians. We refer to that grave class of cases that are frequently seen in private practice, more often in municipal and other hospitals, disease conditions that are so erroneously designated "cardiac - nephritis," which really rarely exists. As a matter of fact, in but rare cases one fails exactly to differentiate between a case that is primarily renal and is showing secondarily only cardiac symptoms, and one that is primarily cardiac and is showing renal derangement only as a result of passive congestion. Every clinician is familiar with the picture of the patient with failing kidneys, where there is basic and marked organic and functional change, with kidney block, with pathological shedding of albumin and casts, with general edema, with a flagging heart and disturbed blood pressure. There is again the clinical picture of the individual who has been a beer drinker, a syphilitic, or hard worker, or all three combined, who starts out with cardiac decompensation, with secondary renal changes, and consequently with edema, and albumin and casts in the urine. He has dropsy and often general anasarca. In the full bloom of both affections it is well nigh impossible to differentiate between the two conditions. Both kinds of cases are grave cases. The renal case is in uremia; the cardiac case is decompensating when seen by the physician the first time in hospital or private practice. Owing to the assumption of impossibility of differentiation that we have just made, the cases show the following composite symptomatology: they may be unconscious or semi-conscious; they may have delirium, severe or moderate; they may show dyspnea or orthopnea; both may have edema of the lungs; both may show edema, ascites, or general anasarca; they may have a history of several weeks preceding the attack of dyspnea, or shortness of breath, with swelling of the feet and ankles; they may have a cough with an expectoration of bloody, frothy or watery material; the pulse may be strong in either case, or it may be irregular and weak. There is nothing characteristic about the pulse in either condition. Physical examination of the heart may reveal nothing which will point to the exact diagnosis, as the heart may be enlarged or displaced in either condition. Concerning cardiac murmurs, they are at best obscure under these conditions, and not to be relied upon. The blood pressure in either condition may be the same.

We are, in short, confronted with a problem that is, as a rule, solved only at the autopsy table. After a rather extended experience with the blood chemical findings in both primary cardiac and renal conditions in their earlier manifestations, and after having been able to check the clinical diagnosis by these so-called retention tests, we decided to try out the methods in actual practice in the class of severe cases that we have just described. We append the abridged histories of a few of the typical cases that have been studied, together with the blood chemical findings. All the case histories except the last were City Hospital patients. The last history is a very interesting case seen in consultation by one of us (Gradwohl). Altogether we have records of forty cases studied by these methods.

The blood was taken in the morning before breakfast whenever possible, received into oxalate of potassium, defibrinated, and examinations were made at once. We used the following methods:

Method of Marshall for urea nitrogen,

Method of Folin modified by Benedict for uric acid,

Method of Folin for creatinine, and the

Method of Benedict and Lewis for sugar.

CASE REPORTS

Case 1.—H. P., white, male, aged 63 years. Entered City Hospital May 26, 1917, complaining of shortness of breath, dizziness, cough and edema of the extremities. Had pain in epigrastic region and stomach trouble. Trouble began about two weeks previously.

Family History: negative.

Past History: intoxicated often; otherwise negative.

Examination: showed a fairly well-developed and nourished aged male.

Head: negative, teeth poor.

Neck: Pulsating vessels.

Thorax: symmetrical; friction rale on left side posteriorly near inferior angle of scapula.

Heart: systolic and diastolic murmur heard at apex and transmitted to left axilla. Double murmurs at aortic area; vessels sclerotic.

Stomach: liver enlarged; otherwise negative.
Genitalia: right-sided hydrocele.
Extremities: edematous.
Skin: dry.
Blood Pressure: S. 210; D. 100.
Wassermann Reaction: + + + + (blood).
Blood Chemical Examination: urea nitrogen, 16; uric acid, 3.3; creatinine, 0.90; sugar, 0.114.
Urine: amber, specific gravity 1027, acid, no albumin, casts, sugar, etc.
Diagnosis: cardiac decompensation (?). Syphilis.
Treatment: 265 c. c. of blood were taken from vein (needle) and patient placed on specific treatment.
Patient's condition improved from beginning of treatment and he was discharged May 24, 1917, in a fairly good condition.
His subsequent history bore out the diagnosis based upon blood chemical findings, namely: cardiac decompensation.
Case 2.—J. G., white, male, aged 63 years. Entered City Hospital April 27, 1917, complaining of shortness of breath, headache, dizziness, cough and swelling of extremities.
Examination: shows a fairly well-developed, but poorly nourished adult white male.
Head: eyes, right pupil very irregular, and larger than left; ears, nose, throat, negative; teeth poor.
Neck: shows pulsating vessels.
Thorax: symmetrical; there was dullness, diminished breath sounds, and impaired tactile and vocal fremitus at both bases posteriorly; compensatory breathing over rest of lung area.
Heart: greatly enlarged to left and downward; apex beat in sixth intercostal space, 1½ inches to left of mid-clavicular line; diastolic murmur at apex and transmitted upward to base; arteries sclerotic.
Abdomen: negative.
Extremities: edematous. Reflexes: sluggish, but present; no abnormal ones elicited.
Genitalia: negative.
Urine: showed much albumin and some casts.
Blood Pressure: S. 250; D. 170.
Blood Wassermann: negative.
Tuberculosis: tubercle bacilli found in sputum; patient sent to Koch Municipal Tuberculosis Hospital May 6, 1917.
Blood Chemical Examination: showed urea nitrogen 108; uric acid, 9.8; creatinine, 4.48; sugar, 0.148.
Patient expired May 11, 1917.
Diagnosis: chronic interstitial nephritis, confirmed by autopsy.
His blood chemical picture was clearly retention of renal origin.
Case 3.—F. M., colored, male, aged 65 years. Entered St. Louis City Hospital September 8, 1917, conscious and rational, complaining of weakness, shortness of breath, and swelling of the entire body and extremities; coughed occasionally and expectorated some frothy material; stated condition began six months ago with swelling of the ankles.
Family History: negative.
Past History: diseases of childhood; malaria when a child; gonorrhea twice.
Social History: laborer (farm work); drinks no alcoholics; smokes and chews tobacco; appetite poor; sleeps well.
Physical examination: patient fairly well-developed and poorly nourished adult, colored male, weight 140 pounds, height 5 ft. 6 in.; general anasarca.
Head: pupils O. K.; react sluggishly; arcus senilis marked; teeth in poor condition.
Neck: marked pulsation of vessels.
Thorax: symmetrical, accessory muscles of respiration evidently called on; diminished resonance over right side; increased tactile fremitus on right; moist rales over entire chest front and back; a friction rale is present on left side anteriorly near third intercostal space at border of sternum.
Heart: enlarged to left and downward; apex impulse in sixth intercostal space in mid-clavicular line fairly strong, but irregular; systolic murmur at apex, not transmitted; aortic roughening; pulmonic second sound accentuated.
Vascular System: pulsation of peripheral vessels; pulse equal, irregular, low tension and easily compressible.
Abdomen: distented; ascites; liver slightly enlarged upward.
Extremities: edematous; knee jerks absent; no abnormal reflexes.
Genitalia: edematous.
Urine: shows albumin, casts and red and white blood cells; leucocytes, 8,000.
Blood Pressure: S. 135; D. 95.
Blood Chemical Examination: urea nitrogen, 28; uric acid, 5.9; creatinine, 2.15; sugar, 0.09.
Patient expired September 18, 1917, and autopsy showed mixed nephritis, with marked cystic degeneration of kidneys; arterio-sclerosis; cardiac hypertrophy, with no endocardial nor valvular disease; edema and congestion of lungs; chronic adhesive pleurisy on left; anasarca; ascites; hydrothorax and hydropericardium.
These findings conform to the blood chemical figures.
Case 4.—H. R., white, male, aged 55 years. Entered City Hospital April 30, 1917; unconscious and no history obtainable.
Patient is a well-developed and nourished adult; unconscious and extremely irritable and restless; respiration labored and air-hunger evident; skin moist, and patient has occasional clonic contractions of muscles.
Head: pupils irregular, but react to light and accommodation; eyes markedly rolled backward.
Neck: rigid and head slightly retracted.
Chest: emphysematous; moist rales over both bases.
Heart: enlarged to left and downward; apex beat in sixth intercostal space; first sound short, second accentuated.
Abdomen: pendulous lax; liver enlarged.
Genitalia: negative.
Extremities: showed increased muscular tonus and marked twitching.
Reflexes: knee jerk hyperactive; clonus present on both sides; normal reflexes exaggerated, suggestive Babinskis and Chaddocks on both sides.
Lumbar Puncture: showed bloody fluid (contaminated); no organisms; blood and spinal Wassermanns negative.

Urine: showed + + + + albumin, and many granular and epithelial casts.

Blood pressure: S. 220; D. 110.

Blood Chemical Examination: showed urea nitrogen, 21; creatinine, 3.68; sugar, 0.188.

Patient died May 1, 1917.

Diagnosis: uremia and chronic interstitial nephritis, confirmed by autopsy.

Blood chemical findings agree with this pathological finding.

Case 5.—J. B., colored, male, aged 56 years. Entered Hospital August 2, 1917, conscious and rational, complaining of shortness of breath, cough, swelling of body and extremities, palpitation of heart, and dizziness. This state of affairs had existed about six months.

Examination: showed a well-developed but poorly-nourished adult colored male; general anasarca, especially noticeable in face and eyelids.

Family History: negative.

Past History: negative.

Physical Examination: Head: flat and ill-shapen, with tortuous vessels in temples; arcus senilis marked; pupils normal; teeth in bad condition.

Neck: marked visible pulsation; cervicle nodes enlarged.

Thorax: barrel-shaped and rigid; rales, moist in character, over entire chest, front and back; symptoms of congestion at lower angle of right scapula.

Heart: enlarged to left and downward; systolic murmur at apex and transmitted to axilla.

Abdomen: distended and tender; ascites present; liver somewhat enlarged.

Extremities: edematous.

Reflexes: knee jerks absent; no abnormal ones elicited.

Urine: showed albumin and casts.

Chemical Examination of Blood: showed urea nitrogen, 18; uric acid, 7.95; creatinine, 2.42; sugar, 0.150.

Patient died on sixth day. No autopsy was done.

Marked increase of uric acid here indicated that this was primarily a renal condition.

Case 6.—R. S., aged 40 years, white, female. Entered St. Louis City Hospital August 9, 1917, complaining of dyspnea, ascites, with pains in abdomen and generalized edema. Pain most marked in epigastrium and patient expectorated much frothy material. Trouble began fourteen months previously during pregnancy and had grown progressively worse since then.

Family History: negative.

Patient had measles, mumps, whooping cough, and had eruption on body nineteen years ago. Menstruation began at 12, regular. Had five children; one miscarriage at two months. Married at nineteen; one child by first marriage; married second time at thirty-one; four children, one miscarriage.

Physical Examination: Head: scalp negative, face edematous, eyes moderately prominent and horizontal; nystagmus present, marked when rotated laterally; pupils normal; nose and ears negative; teeth poor and pyorrhea alveolaris present; pharynx, tonsils, etc., negative.

Neck: edematous; thyroid and posterior cervicles palpable; marked pulsation of vessels of the neck.

Chest: walls edematous and respiration labored; large, moist rales over chest, front and back.

Heart: enlarged to left and downward; systolic murmur loudest at base and apex, but audible over entire precordia; not audible in axilla or back; sounds irregular; pulse irregular and poor volume.

Abdomen: markedly distended with fluid; liver enlarged and tender.

Extremities: edematous markedly.

Reflexes: all sluggish; no abnormal ones elicited.

Urine: showed albumin and casts in abundance.

Blood Pressure: S. 190; D. 140.

Chemical Examination of Blood: urea nitrogen, 15; uric acid, 2.8; creatinine, 0.90; sugar, 0.096.

Diagnosis: cardiac compensation. Her blood chemical analysis showed no retention.

Patient is in hospital at present time in improved condition.

Case 7.—F. W., colored, male, aged 65 years. Entered St. Louis City Hospital March 26, 1917, conscious and rational, complaining of having been sick for previous two years with shortness of breath, swelling of extremities and abdomen, cough and watery expectoration, headache and dizziness; appetite good; bowels regular; urinates two or three times daily and three or four times at night.

Family History: negative.

Past History: usual diseases of childhood; smallpox and malaria twenty years ago; typhoid fifty years ago; rheumation in 1891; was in hospital one year at that time; chancre fifty years ago; gonorrhea thirty years ago.

Physical Examination: showed a well-developed and nourished adult male; dyspneic and cyanotic.

Head: pupils equal and react to light, but fixed to accommodation; pharynx congested; marked pulsation of muscles of neck.

Lungs: large, moist rales over entire chest, front and back; no dullness.

Heart enlarged to right and downward; marked arrhythmia, with extra systole; impurity of first sound.

Abdomen: liver enlarged; right inguinal hernia; moderate amount of ascites present.

Genitalia: negative.

Extremities: edematous; knee jerks absent; all reflexes sluggish; no abnormal ones elicited.

Urine: showed albumin and casts in moderate amounts.

Blood Pressure: S. 120; D. 70.

Wassermann: negative.

Chemical Examination of Blood: urea nitrogen, 16; uric acid, 3.3; creatinine, 0.90; sugar, 0.114.

Patient expired very suddenly August 16, 1917. Autopsy showed chronic myocarditis, with acute dilatation and congestion of liver, spleen, kidneys, etc.; edema and congestion of lungs; hydrothorax; ascites; edema of brain; kidneys in good condition.

Here again the blood analysis agreed with the anatomic diagnosis.

Case 8.—H. S., aged 58 years. Had been rejected in his youth for army service in his native

country on account of a congenital heart lesion. This patient was a busy professional man. For several years preceding his breakdown he had a high blood pressure. He was troubled with nasal bleeding almost uncontrollable at times. In the early spring of 1916 he had a very severe attack of epistaxis. Following this, he noted gradually increasing dyspnea. In July, 1916, during a very hot spell, he broke down suddenly with these symptoms: dropsy and edema of the legs, extending to the thighs. He became delirious very suddenly. He was seen by several physicians at once. His urine showed albumin and casts. There seemed to be no exact method of determining whether this were a primary renal or cardiac disturbance; the majority of opinion veered to the side of uremia. His blood chemical picture was as follows: urea nitrogen, 11; uric acid, 2.4; creatinine, 2.0; sugar, 0.155. This clearly indicated no retention. Acting upon these findings, efforts were more particularly directed to the cardiac apparatus. The patient came out of his attack very nicely and is now attending to his work very well.

Surveying these case histories, and looking back upon the patients as we saw them, it must be confessed that in no instance would we have been able to determine the exact diagnosis without the aid of the blood chemical tests. The autopsy records, when obtainable, corroborated in each instance the blood chemical findings upon which the differential diagnosis was made.

CARDIAC CASES.

	BLOOD				URINE		
CASE NO.	UREA N	URIC ACID	CREATININE	SUGAR	ALBUMIN*	SUGAR	CASTS*
4	16	3.3	0.90	0.114	NONE	NONE	NONE
6	15	2.8	0.90	0.096	++++	"	++
7	16	3.3	0.90	0.114	++	"	++
8	11	2.4	2.00	0.155	PRESENT	"	PRESENT
RENAL CASES.							
2	108	7.8	4.48	0.148	++++	"	++++
3	28	5.9	2.15	0.090	PRESENT	"	PRESENT
4	21		3.68	0.188	++++	"	++++
5	18	7.9	2.42	0.150	PRESENT	"	PRESENT

* — ++++ LARGE AMOUNT
++ MODERATE AMOUNT

In surveying the figures of this table, we are struck by the fact that in the group of the cardiac cases, namely: Nos. 1, 6, 7 and 8, there was practically no increase in the non-proteid nitrogenous constituents, though the urine in each case (except No. 1) showed albumin and casts. These figures all show that the renal cases, namely: Nos. 2, 3, 4 and 5, all showed a marked increase in these blood constituents, particularly in respect to Case No. 2, which has 108 mgms. urea nitrogen, 9.8 uric acid, 4.48 creatinine, and 0.148 % sugar. It is to be noted that all of the cases showed marked increase in uric acid. Attention is also called to the fact in this table that the urine shows albumin and casts, just as it did in the cardiac cases. By these tabulated figures alone we are able to differentiate with exactitude the difference between the cardiac case and that primarily renal. In other words, laboratory data in this mixed group of cases were sufficient to point the way to the correct diagnosis, and the institution of the proper treatment. Further comment than this on the importance of this work seems superfluous.

Attention must be called, too, to the fact that the treatment of these two conditions is so widely different that any effort to harmonize them is practically an admission on the part of the physician of his inability to determine the primary cause of the trouble. It is to be noted that the failure of exact diagnosis means impossibility of application of the correct therapeusis. Electric packs, for instance, in cardiac cases would be harmful. Morphine in cardiac conditions is necessary, but dangerous in nephritic cases where there is edema of the lungs. All kinds of kidney stimulants are dangerous in renal conditions, but are extremely helpful in cardiac conditions in relieving the edema. These are the cardinal points upon which revolve possibly the question of bringing the patient out of his cardiac or renal embarrassed condition, as the case may be. We offer these facts as arguments for the usage of blood chemical methods in this group of cases. We are confident that if these methods are properly performed the misleading and erroneous term "cardionephritis" will be consigned to the limbo of "shot-gun" diagnosis, where "malaria," "neurasthenia," "inflammation of the bowels" and others long ago have been properly buried. In addition to this, proper treatment may be applied, and many of these individuals' lives may be tided over for considerable lengths of time.

DISCUSSION

Dr. C. W. Dowden, Louisville, Ky.—In the essays and discussions that have been offered us

today we have repeatedly heard the word "standardization" used. As a matter of fact, modern efficiency and modern perfection depends entirely upon the process of standardization. Our food is standardized, our drugs are standardized, our automobiles are standardized, and, in fact, everything that is worth while is standardized. This process of standardization has been very lightly applied to diagnosis. Let us take patients who are suffering from typhoid fever or from malaria or syphilis, for instance. If they are examined by ten different physicians, we shall get about seven different opinions. About 33 1/3 % are correct, and that is really about the percentage of correct diagnoses we will get in all conditions as shown from the tabulation of numerous medical cases in the various hospitals of the country. On the other hand, however, take ten cases of typhoid fever or malaria or syphilis, and if their blood is subjected to proper examination we shall get nine or ten opinions that are exactly the same. This means that at this time we have a diagnostic standard for syphilis, which is the Wassermann. We have a diagnostic standard for typhoid, which is the Widal; and we have a diagnostic standard for malaria, which is the finding of the plasmodium in the blood. Now, how much further can we apply our standards to diagnosis? The personal equation certainly enters to a very large degree in a physical examination and history taking. Please understand that I would not disparage a most careful history nor a most careful physical examination, because I think both are of the greatest importance; but in the study of heart and renal conditions particularly, I think that in the physical examination and history alone, the personal equation very largely enters and is often responsible for many mistakes. In a study of the blood chemistry in something like 180 cases, I think I can safely say I have been able to separate our renal cases from the cardiac cases in every instance. In the cardiac cases that were moribund and might have been taken for uremia, the finding of normal, non-protein nitrogenous products in the blood has led us to the conclusion that the vital issue came from the cardia rather than from the kidney.

In the study of any metabolic process it is necessary to do more than to consider the functional capacity of the kidney or the retention of non-protein nitrogenous matter in the blood. We must begin with the entrance of the protein molecule which is digested in the stomach to the stage of albumose; this is now passed into the intestines and split into shorter chains by the pancreatic juice. After entering the wall of the intestine they are further changed by a third proteolytic enzyme, and finally converted into amino-acids. After this conversion has taken place, the blood, now heavily laden, first reaches the liver, where the amino-acids are converted into urea. If, knowing this, the stomach is at fault in its secretory function, might this not interfere with the first change in the protein molecule? If the intestine is at fault, might not still further conversion of the protein molecule be disturbed? Finally if the liver itself is diseased, or the blood flow through the liver is disturbed, the final conversion of the amino-acids into the urea is likely to be incomplete, with the result that the urine urea is not a true index. In those cases where the liver is diseased and where we do not have disease of the kidney, with other non-protein nitrogenous products in the blood normal, theoretically we should have an abundance of the amino-acids in the blood if the liver has not been able to convert them into urea.

In closing, I would insist upon a standard of diagnosis for other diseases than syphilis, typhoid and malaria. There may be still others that do not occur to me. In three or four or five years it is to be hoped that we will have a standard of diagnosis for every disease that confronts the physician.

Dr. James S. McLester, Birmingham, Ala.—I want to speak a word of appreciation of the excellent paper by Drs. Gradwohl and Powell, although I can not agree with them in their interpretation. While the micro-chemical analysis of the blood is of great value at times in the diagnosis of early nephritis, and at other times in offering a basis for prognosis, I can not see that it is ever of any value in differentiating the nephritis which is secondary to chronic heart disease from primary nephritis. Nor do I think that it will ever aid in such differentiation.

Dr. Allan Eustis, New Orleans, La.—I have been extremely interested in the question of the nitrogen content of the blood in nephritis. In fact, as early as 1905 I published a paper entitled "A New Method as an Aid in the Diagnosis of Renal Impairment." In this paper I outlined a very simple method for the determination of the total nitrogen of the blood, and since then I have seen no good reason to change my views, inasmuch as the protein element of the blood changes very little. In renal impairment the increased nitrogen content is in the non-protein portion. You doubtless notice from the paper of Dr. Gradwohl that while the urea nitrogen increases, so do the creatinine, uric acid, and a large number of other nitrogenous bodies.

Dr. McLester has brought out an excellent point, viz., that a determination of non-protein nitrogen in the blood is of very little practical value in the diagnosis of certain cases, as we can definitely ascertain, especially since the advent of the phenolsulphonephthalein test, whether or not the case is one essentially renal or not. I agree with him absolutely that a renal case that has a dilated heart is very easily determined. It is interesting to note that the total nitrogen of the blood in normal individuals by my method is lower than by the method that Strauss reported some fifteen years ago. My normal is from 80 to 100 milligrams of total nitrogen in 100 c. c. of blood. In nephritics I have found the total nitrogen of blood invariably increased and highest when patients are on the verge of uremia.

In one case I recall distinctly there was a total nitrogen of 250 milligrams per 100 c. c. of blood, which was lowered in three hours by severe sweating to 135 or 140 milligrams. In other cases it persisted high in spite of therapeutic endeavors. I believe this method will be a great aid in the treatment of these cases. We can watch them better by its use than by using the 'phthalein test. The method is simple and consists in withdrawing 20 cubic millimeters of blood from a prick in the finger, this being run into 1 c. c.

of chemically pure sulphuric acid in a test tube. The mixture is boiled over a flame and a standard solution of potassium permanganate added drop by drop while boiling until the solution becomes water white. It is diluted to 100 c. c. in Nesser jars, a standard solution of manganese sulfate added and Nesserized. This method is so simple it can be carried out in twenty minutes. I have not used it myself of late except as a therapeutic guide.

I believe with Dr. McLester that with the 'phthalein test we do not have much trouble in making a diagnosis. These methods are of advantage in following our cases along therapeutic lines.

Dr. Gradwohl (closing).—In reference to the discussion of our Chairman, I wish to state that there is no question that every grave case of cardiac trouble has some renal impairment, and that every case of renal trouble has some cardiac impairment. I wish to be understood as making my remarks more from a laboratory man's standpoint than from the clinician's point of view. I am not responsible for the clinical examination of these patients, but this much I can say, and that is that after studying the earlier cases, those with only slight impairment, with only accumulations of uric acid, when my attention was called to the severe cases I found on investigation that none of the clinicians that I happened to know were able to make this differentiation; that is to say, this group of cases, as I have stated, was erroneously called "cardio-nephritis,' and upon very close cross-examination on my part of these clinicians I was never able to get any one of them to state that this one is primarily a cardiac case or that one is primarily a renal case. In other words, they seemed to sidestep an exact clinical diagnosis. From my investigations I am satisfied that competent clinicians can not differentiate between these two conditions when they exist in an advanced state. Our results checked up by autopsies have shown that blood chemical methods have made such a differentiation. We, therefore, claim that blood chemical methods have succeeded where clinical or physical examination has failed.

We seem to have so much satisfaction with these methods in separating one group from another that I thought it was a matter of extreme importance to publish our findings and conclusions. Further than this, I wish to re-echo some of the remarks made by the Chairman (Dr. McLester) in his excellent address, that the methods of blood chemistry are not difficult; that any well-trained laboratory man can do them and their usefulness is almost beyond belief. I do not mean to say that every medical case observed should have a chemical analysis of the blood, but information is obtainable by these methods that I do not believe has ever been obtained in any other way. I feel that chemistry is coming into its own in connection with clinical medicine. I have always leaned to the side of bacteriology and serology in respect to their great importance in connection with the problems of clinical medicine, but I do believe biological chemistry is going to come to the forefront in the next few years in solving many of the difficult problems of everyday practice.

POLLINOSIS OR HAY-FEVER: ITS SPECIFIC TREATMENT

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and
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INTRODUCTION

In 1819, Bostock, an Englishman, gave the first accurate clinical description of the disease under discussion. His analysis of the symptoms were so keen that later writers have been unable to add much of genuine importance. Bostock considered that the cause of the malady was to be sought in the emanations arising from hay, under the influence of the sun's rays, though the term "hay-fever" was in use prior to Bostock's time. Numerous theories came and went until the work of Charles H. Blackley made its appearance in 1873. A sufferer from the vernal form of the disease, Blackley chose to experiment upon himself in the hope of finding the true cause of hay-fever. In a series of remarkable, painstaking studies, covering a period of years, he gradually came to the conclusion that hay-fever is due to the pollen of certain plants. He devised wind plates for the detection of pollen granules in the air, showed that pollen is easily carried for long distances, and by means of inoculation tests demonstrated his ability to induce characteristic hay-fever symptoms at any period of the year. His work was partly ignored, partly overshadowed by the discoveries of Koch and Pasteur, until, in 1903, Dunbar confirmed and amplified Blackley's work, and firmly established the etiological significance of pollen in the production of hay-fever. Today no one doubts this truth—even though some contend that other factors assume an importance equal to that of pollen in the causation of the well known symptoms. Despite time-honored usage, therefore, the adoption of the term pollinosis in place of hay-fever would appear to be

*Read by title in the Section on Medicine, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

rational, since it conveys the definite notion as to the essential causative factor.

ESTABLISHED FACTS WITH REFERENCE TO THE ETIOLOGY AND PREVALENCE OF POLLINOSIS

It has long been recognized that two forms of pollinosis occur, — one in the spring from early May on, and one in late summer. Though clinically similar, they are caused by the pollens of totally dissimilar plants. Pollen granules are the male elements of flowering plants, and in themselves are incapable of reproduction. In none but so-called perfect flowers does self-fertilization occur; in all others it is brought about either through the agency of insects or of the wind. It has been pointed out, especially by Scheppegrell, that in the cases in which insects effect fertilization, the flowers in question are usually brightly colored or white, fragrant, possess honey glands, and produce relatively few pollen granules, as a result of which the plants in question assume little importance in the causation of pollinosis. On the other hand, plants fertilized by wind pollination are in most instances neither conspicuous nor fragrant, they possess no honey glands, and the pollen granules, which are very buoyant, are formed in immense quantities. Hence, for all practical purposes, only those pollens which are wind-borne need be considered active agents in the causation of pollinosis. As a result of these and other observations, notably those of Goodale of Boston, it has been possible to formulate the following conceptions:

1. Vernal pollinosis, often called "rose cold," is in most instances due to the pollen of some member of the Gramineæ or grasses. These are all monoecious plants. The pollen granules are unspiculated, and are presumed to cause irritation chiefly by reason of their high protein content. Studies seem to indicate that these pollens though very abundant are not carried very great distances by the wind. It has been estimated that in a timothy field during active pollination 8 million granules are given off for each square foot of surface. This group includes the grasses, both wild and cultivated, some cereals, such as rye, oats, and wheat, and possibly some trees, especially maples and oaks. Timothy is perhaps the most frequent cause of this variety of pollinosis.

2. The autumnal form is due to the spiculated pollen granules of dioecious plants, belonging chiefly to the Compositæ family. About 85 % of the cases in this part of the country are due to the pollen of the common or giant ragweed (Ambrosia elatior or trifida). Contrary to the general opinion, the pollen of goldenrod is not a frequent offender. Its pollen *is* toxic to susceptible individuals, but probably only by direct inhalation. Its pollen granules are relatively few in number and viscid, and insect fertilization is common, as is true of some other conspicuous members of this group, such as the daisy and asters. The reactions from these pollens are immediate, due to their abundant spicules, which vary from two to three microns in length. The granules possess a strong extine in contrast to the non-spiculated pollens and their protein content is low. The ragweed pollen possesses remarkable buoyancy, partly by reason of its small size, 380 million granules being required to make one gram.

3. Appropriate studies have revealed the significant fact that sensitiveness to one member of a group is usually associated with sensitiveness to all other members of the same group. This is evidence, therefore, in favor of the biological identity of the pollen proteins. It is valuable since it has led to the discovery that, in general, immunization with the protein of one pollen affords protection against the pollens of other members of the same botanical family. Immunization against ragweed, however, does not protect against goldenrod, according to Cooke.

4. The studies of Cooke and Vander Veer, upon human sensitization in general and hay-fever in particular, lead them to believe that "the sensitization is not directly inherited, although the tendency to spontaneous sensitization is inherited as a dominant character" in the Mendelian sense. Approximately 1 to 2 % of the inhabitants of any locality, all of whom inhale the pollen, are sensitized. This one fact is essentially positive and conclusive evidence against the theory of a true "pollen toxin" in the Ehrlich sense of the word.

5. In the light of all available evidence we may, therefore, define pollinosis or hay-fever as a *seasonal state of anaphylaxis, ocurring in individuals hypersensitive to the proteins of various pollens, with clinical manifestations usually limited to the mucous membranes of the eyes and respiratory tract.* Opinions differ as to whether "antibodies" actually occur in the blood of sponstaneously hypersensitized individuals. Cooke and his co-workers have been unable to demonstrate them by any of the so-called immunity reactions. Inasmuch as many studies have tended to prove that the anaphylactic reaction is essentially cellular and not humoral, it is safe to assume, at present, that in pollinosis "antibodies" exist only in the sensitized tissues and that immunity in the true sense of the term is not conferred by present methods of treatment.

SPECIFIC THERAPY

It may be accepted as an established fact that pollinosis is not due to a true toxin, as was believed by Dunbar, who therefore attempted to treat the disease by passive immunization, using an "antitoxic serum" called "Pollantin" derived from immunized horses. Since the pioneer work of Noon in 1911 practically all specific treatment has been given along the lines of active immunization, quite analogous to the process of so-called desensitization in experimental anaphylaxis. The attempt is here made briefly to indicate the necessary data upon which appropriate treatment can be instituted.

1. *The Type and Degree of the Patient's Sensitization*—For this purpose it is necessary, first, to prepare *pollen extracts.* These should include the protein extracts of the common causative pollens of the vernal and autumnal types. Since the aqueous solutions are by no means of certain stability, even in the presence of tricresol, it has seemed best to us to use the acetone precipitate method first introduced by Clowes. By this method one secures as a final product a fine powder quite readily soluble in water. The powder keeps indefinitely. The weight of the final product with relation to the weight of the original untreated pollen is used in the preparation of a so-called 1-500 solution. Such solutions form the basis for other dilutions, and, if kept sterile and on ice, retain their potency for a month or more. Cooke makes his pollen protein dilutions in such a manner that they can be standardized in terms of milligrams of N per c. c. No matter how made, these solutions are employed in one of two ways.

(a) Intracutaneous tests, using .02 c. c. of 1-500 pollen dilutions, are carried out, in order to determine to what pollen or pollens the patient reacts. Positive tests usually come out quickly and are characterized by wheals of varying size and shape surrounded by a good erythema, often associated with local itching or even mild constitutional symptoms of hay-fever. The reactions persist for several hours, in some instances for a day, and may be accompanied by swelling of the arm. The local reaction is not necessarily a good index of the degree of sensitiveness.

(b) The Degree of Sensitization is next determined by means of conjunctival reactions. From the original 1-500 solution dilutions are prepared, with either sterile water or normal saline, of the following strengths:

1-1,000,000	1-50,000
1- 500,000	1-25,000
1- 250,000	1-10,000
1- 100,000	1- 5,000

One or two drops of the weakest dilution are instilled in the eye of the patient. At the end of five minutes, if no reaction has occurred, a drop of the next stronger solution is used, and one proceeds thus until a definite response is elicited. This is recognized by injection of the conjunctivæ and inner caruncle, lacrymation, and subjective symptoms of burning, often followed by sneezing and increased nasal secretion; in other words, the symptoms of pollinosis in a mild form. In case no reaction is elicited in a strength of 1-5,000, which represents a low sensitization, it is scarcely worth while to go ahead with the expectation of satisfactory results; in this case other pollens should be tried. The weakest dilution which elicits a definite eye reaction determines the initial dosage for that particular patient.

2. *Details of Treatment*—(a) The best results are secured when treatment is instituted about six weeks before the hay-fever season is due.

(b) The initial dose varies from .1 to .5 c. c. of the dilution just capable of producing a mild conjunctival reaction. The smaller doses are employed in highly sensitized patients; in general, in those reacting to dilutions of 1-100,000 or less.

(c) The injections are given subcutaneously and preferably in the same arm throughout: the injections usually cause a mild local reaction, with redness, possibly a little soreness, and, ultimately with the production of small painless bumps which may persist for some time after treatment is stopped. Under no circumstances should the injections be followed by constitutional reactions; if such occur, they indicate the use of too much or too strong a dose.

(d) Our experience has taught us not to increase the dosage by any rule of thumb. Each case is unto itself. The injections are given from once to three times a week, depending upon the original degree of sensitization. The aim of treatment is to reduce the sensitization to 1-1,000 or under, as measured by the conjunctival reaction, prior to the expected date of the onset of symptoms. The experience of the past year has shown that, in general, after the first three or four injections, one may give each time ½ to 1 c. c. of a dose double that in strength of the one preceding. In several instances a dosage of 1 c. c. of a 1-50 dilution was reached before the season commenced. The decrease in conjunctival sensitiveness has been so consistent in our cases that we deem it unnecessary to make these tests oftener than once every two weeks. One must not be misled, moreover, by the occasional finding of "permanent conjunctival reactions." Just what is their explanation is not known; but, in the absence of constitutional symptoms, the injections of increasing strength should go on, regardless of a persistent eye reaction to weaker dilutions.

(e) Once the hay-fever season starts, treatment should continue as before; if high doses have already been reached, hold to this level and advance further if possible. If the dosage is still low, when pollen begins to be in the air and clinical symptoms become manifest, proceed with more caution, but according to the same rules.

(f) In case treatments are missed for a period of two weeks or over, commence all over as though the patient were being seen for the first time. Give not more than 1/10th of a c. c. of the dilution then found to cause an eye reaction.

3. *The Results of Treatment*—The published reports of Noon and Freeman, Clowes, Goodale, Ulrich, Oppenheimer, and of Cooke, have been singularly encouraging and remarkably uniform. The most extensive series is that of Cooke, who states that, in general, 75 % of the cases are relieved of 75 % are more of their symptoms and consequent discomfort. No one but a sufferer can truly appreciate what this really means. Our own experience has been most gratifying, for, with but one exception, all of our cases have experienced tremendous relief, amounting in not a few instances to a complete absence of symptoms while living under the same conditions as before. A number of points of importance are worth mentioning.

(a) In general, cases of ragweed pollinosis are more resistant than those of the vernal type.

(b) Patients showing the highest grade of sensitization give the most brilliant therapeutic results and seem to require less treatment to control their symptoms.

(c) In any case better results may be confidently expected with each successive year.

(d) The question as to permanent cure is of course a pertinent one. Probably the so-called immunity which is manifested by the clinical alleviation or absence of symptoms is slowly lost during the winter, the patient gradually returning to the sensitive state. This point, however, is not settled. There are undoubted instances of spontaneous cure. Our own work has led us to believe that even though complete and permanent desensitization may not occur, none the less each year's treatment effects a definite and permanent lowering of the patient's original reactivity. Improved methods of dosage and further immunological studies may show the way to secure permanent freedom from attacks.

(e) In cases of pollinosis complicated by asthma, the results are often most satisfactory, particularly when suitable studies reveal a blood calcium deficiency

which is adequately corrected. These conditions are most apt to be encountered in fat individuals showing polysensitization.

SUMMARY

Many points of practical and theoretical importance have necessarily been omitted from this paper. A great number of problems involved in the subjects of anaphylaxis and protein sensitization in general remain to be solved. Despite the incompleteness of our knowledge, we no longer need condemn the victim of pollinosis to six weeks of untold misery, or commend some long journey too often unsuccessful in its object. In active immunization with potent pollen extracts there is almost certain relief for the majority. In addition to this, of course, the patient's general health should be carefully watched, and all outspoken obstructive or infectious lesions of the nose, throat, or sinuses should be given appropriate treatment. Last, and by no means least, it is the duty of every progressive physician and citizen to work for the enactment of laws which will be effective in the ultimate eradication of weeds so needlessly the cause of intense suffering and great economic waste.

11 *East Chase St.*

TRICHOCEPHALUS DISPAR

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The obect of this article is to draw the attention of those members of the medical profession who are interested in tropical medicine to the fallacy of the supposed non-pathogenicity of *Trichocephalus dispar* and also to stimulate the efforts of such men toward the discovery of an efficient remedy for the treatment of trichocephaliasis. A review of the literature on this subject leads the reader to believe that practically no symptoms, subjective nor objective, appear in trichocephalous infections, and probably on account of the little importance attached to its presence in the intestinal tract, no very careful and prolonged studies have been made with regard to its life cycle or the treatment of the disease.

In tropical countries where *Trichocephalus* is common other intestinal parasites are also common, and it is rather unusual in my experience to find *Ankylostoma, Lumbricoid, Strongyloid, Balantidium coli*, etc., without also finding *Trichocephalus* present in the same patient. It is true, as claimed by all authors whom I have read on the subject, that one frequently encounters cases of pure infection of *Trichocephalus*, who apparently suffer no inconvenience from the presence of the parasites, and who show no signs nor symptoms of the disease, its presence being discovered only through routine examinations of feces; but the same thing may be said of nearly all the others, as any student of tropical medicine knows, and just why the pathogenicity of *Trichocephalus* has been overlooked by otherwise careful observers is hard to explain with any degree of surety, but probably the severe symptoms of *Trichocephalus* have, in many cases, been attributed to other parasites coincident with *Trichocephalus*.

So far as the writer has observed, the symptoms and signs of trichocephaliasis are practically identical with those of ankylostomiasis, the only difference being that of degree of severity, that is, I have seen *Ankylostoma* (and also *Lumbricoid*) cases that showed a little more severe toxemia, anemia, and concomitant symptoms than the worst cases of trichocephaliasis I have encountered; but to say that trichocephaliasis does not cause severe symptoms such as toxemia and anemia is a fallacy and the subject should be studied more carefully with the object in view of learning definitely the life cycle of the parasite and discovering some efficient means of expelling it from the intestinal tract.

In this connection it would seem appropriate to cite just a few cases in order that the reader may decide in his own mind whether or not the writer is correct in his assumptions.

CASE REPORTS

Case 1.—Mercedes O., white child of Spanish parentage, born in Cuba, eight years of age. Very anemic and listless; fairly well nourished, but muscles flabby. Although coming from ordinarily intelligent parentage, the patient is dull and does poorly in school, becomes easily fatigued and does not show the ordinary interest in what

she is doing whether it be study, a household task or play as is normally shown by children.

Past History.—Malaria several times and gastroenteritis several times in infancy. Measles when five years of age.

Present Illness.—The patient has shown the subjective symptoms enumerated above for the past two years, but gradually increasing in severity. Also the child does not seem to be making normal growth, although she is fairly well filled out and can not be said to be emaciated. Appetite variable, sometimes good, sometimes anorexia; history of eating earth; constipation present; irritable.

Physical Examination.—Pallid, slightly undersized, listless, scleræ pearly, m. m. pale, musculature soft and flabby, abdomen protruding. Lungs negative. Heart shows hemic systolic murmur over mitral and pulmonic valves. Abdomen tympanitic. Deeks' sign* present, spleen not palpable, no tenderness elicited. Liver normal in size. Reflexes negative. Lymph nodes—general enlargement. (The author has found lymphadenopathy to be a constant sign in cases of intestinal parasites.) Urinalysis: negative. Blood: marked eosinophilia, no parasites. Feces: numerous eggs of *Trichocephalus dispar*. Both quassia and bisulphate of quinin enemata failed to bring any oxyuris.

Case 2.—Florencia O., sister to Case 1; nearly three years of age; can say a few words, but does not talk much.

Past History.—Malaria once; gastro-enteritis two or three times.

Present Illness.—About the same as Case 1, but existing approximately for one year. Variable appetite, alternating diarrhea and constipation. History of eating earth.

Physical Examination.—Undersized white child, listless, pallid (complexion waxy). Scleræ pearly; m. m. pale; lungs negative. Heart shows slight hemic murmur over pulmonic valve. Abdomen protruding and tympanitic. Deeks' sign slight but present. Spleen and liver negative. Musculature flabby. Lymph nodes: cervical and inguinal glands palpable. Reflexes negative. No urinalysis made. Blood: marked eosinophilia. Feces: Trichocephalus dispar. Both quassia and bisulphate of quinin enemata failed to bring oxyuris.

Case 3.—Maria O., mother of Cases 1 and 2, white, Spanish woman, 32 years of age, living in Cuba fifteen years.

Past History.—Mother of five children, all living. One miscarriage. Menses usually regular but often scanty. Usual diseases of infancy. Malaria several times.

Present Illness.—Variable appetite; palpitation of heart; shortness of breath; lassitude; usually troubled with constipation; diarrhea present at times; feet and ankles swell at times.

Physical Examination. — Well proportioned, fairly well nourished white woman; pallid; scleræ pearly; m. m. pale; pulsating carotids. Lungs negative. Heart: marked hemic systolic murmur over mitral and pulmonic valves. Frequency, 92 per minute. Abdomen: spleen palpable; liver negative; Deeks' sign present; tenderness seems to be present more or less over entire abdomen on deep palpation. (Patient somewhat neurotic.) Lymph nodes show general enlargement. Reflexes slightly exaggerated. Extremities: no edema present at time of examination. Urinalysis negative. Blood: marked eosinophilia—no parasites. Feces: *Trichocephalus dispar* plentiful. One ankylostoma egg was found in four slides.

Case 4.—Dolores R.; white child of Spanish parentage, 11 years of age, born in Cuba.

Past History.—Whooping cough several years ago. Measles one year ago. Enteritis several times in infancy. Malaria once.

Present Illness.—Sick three years; listless; shortness of breath; feet and ankles swell during the day and go down during the night. Appetite poor at times; other times voracious. Capricious as to things desired to eat. History of eating earth. Palpitation. Irritableness.

Physical Examination.—An undersized white child; apathetic; pallid; scleræ pearly; m. m. pale. Lungs negative. Heart: systolic murmur over mitral and pulmonic valves. Abdomen protruding; Deeks' sign present; liver and spleen negative. Lymph nodes: general enlargement. Reflexes negative. Extremities negative. Urine negative. Blood: marked eosinophilia. Feces shows many *Trichocephalus dispar* eggs.

Case 5.—Juan A.; white; male; Cuban; 28 years of age. Entered hospital suffering with light tertian malarial infection, which cleared up quickly under liquid quinin.

Past History.—Usual diseases of infancy. Malaria several times, but never very severe. Venereal infection denied. Smokes moderately.

Present Illness.—Aside from the usual malarial history of chills, fevers and sweats for about a week, patient states that he has "felt badly at times" ever since he can remember. History of "ground itch" when a boy of six or seven years of age. Has been working in the country more or less ever since he left home as a general laborer. Complains of palpitation, shortness of breath, anorexia, alternating constipation and diarrhea. Denies earth eating.

Physical Examination.—White male, rather poorly nourished and developed; pallid; scleræ pearly; m. m. pale; teeth bad, beginning pyorrhea; pulsating carotids. Lungs negative. Heart shows hemic systolic murmur over mitral and pulmonic valves. Abdomen: Deeks' sign present; liver negative; spleen palpable, somewhat tender to touch; no distention. Lymph nodes show general enlargement. Reflexes slightly exaggerated. Extremities negative. Genitalia negative (no discharge nor scars). Urine: febrile, later normal. Blood: tertian plasmodia, marked eosino-

*Deeks' Sign.—Taking a piece of the skin of the abdomen between the thumb and index finger, pulling and twisting at the same time and then suddenly letting go. If the skin snaps back to place instantly and does not "stretch" much, sign is negative. If it stretches easily and "drags" in going back the sign is positive and indicates abdominal disturbance. It is always marked in typhoid and in severe cases of intestinal parasites.

philia. Feces: *Trichocephalus dispar* ova plentiful.

Case 6.—Francisco L.; white; Cuban; male child, four years of age; well nourished. Lived in the country since born. Father a Spaniard; mother a Cuban.

Past History.—Enteritis several times. Whooping cough a year and a half ago.

Present Illness.—Father brought child to clinic for treatment for asthma, which is most troublesome at night. History of capricious appetite, but not of earth eating.

Physical Examination.—Well nourished white male child, apparently two and a half or three years of age; pallid (complexion waxy); scleræ pearly; m. m. pale. Head and neck negative. Lungs show sibilant rales over entire chest. Heart: no murmurs heard. Abdomen: Liver and spleen negative; Deeks' sign not present. Abdomen protruding and tympanitic. Lymph nodes: cervicals and inguinals palpable. Reflexes negative. Extremities negative. No urinalysis made. Blood: eosinophilia present. Feces: moderately heavy infection of *Trichocephalus dispar*. Quassia failed to show oxyuris. The asthmatic symptoms are attributed by the author to intestinal irritation caused by the parasites—a reflex phenomenon frequently met with in patients harboring intestinal parasites.

All specimens of feces from the above cited cases were centrifuged and the examinations carefully made.

I have tried with many different remedies to expel the parasites, but so far without success. I thought at first that I was getting results with chenopodium and also with oil of eucalyptus because of the eggs' disappearing from the feces after treatments, but they always reappeared after the expiration of a few days or a week and careful search of after-treatment stools in numerous cases have failed to demonstrate one single worm. The ordinary anthelmintics possibly make them sick, but I have seen no evidence so far of their killing the parasites.

Besides giving vermifuges in the usual manner, I have also tried intramuscular injections of thymol in sterile olive oil and also chenopodium in the same manner, but without any noticeable change in the number of eggs appearing in the stool, and also careful examination of all stools over a period of a week while on daily injections failed to show one whip-worm.

CONCLUSIONS

1. *Trichocephalus* dispar has not been studied sufficiently in the past to realize its importance in parasitology.

2. *Trichocephalus* can give rise to very annoying and even severe symptoms such as severe anemia, dirt eating, etc.

3. Eosinophilia is a constant finding in *Trichocephalus* infections, just as in other intestinal parasitic infections.

4. Lymphadenopathy is a fairly constant finding in trichocephaliasis, just as in ankylostomiasis and ascariasis.

5. Deeks' sign is fairly constant in patients presenting severe symptoms from infections of *Trichocephalus dispar, Ankylostoma-duodenale* and *Ascaris Lumbricoides*.

6. So far as known an efficient vermifuge is still to be found which will rid *Trichocephalus* sufferers from their parasites, and the attention of other workers is respectfully drawn to this fact.

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RALES AFTER EXPIRATION AND COUGH AS A MEANS TO EARLY DIAGNOSIS IN TUBERCULOSIS*

By B. L. Taliaferro, M.D.,
Catawba Sanatorium, Va.

"Expire fully, cough and quickly inspire moderately deeply."

Translate these instructions into plain every-day words for the patient and go over the entire stripped chest with your stethoscope and you will be surprised how often you will hear rales that are not elicited on ordinary or deep breathing.

Bray (Jour. A. M. A., March 11, 1916), enters into a discussion of how the rales are produced and why. You will find the article interesting. Without going into details I want to impress on those of you who are not familiar with this method of bringing out the latent rale that it is a very simple and yet a very effective means of discovering rales which would otherwise be overlooked.

It is not surprising to me that so few

*Read by title, Section on Public Health, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

general practitioners use this simple method. When I graduated nothing was known about it and even now the average recent graduate has not been sufficiently impressed with its importance to make use of it. Nearly every man interested in or doing T. B. work uses it as a part of his routine examination.

It seems that nearly all simple measures are hard to popularize. Old Naaman set a bad example when he at first refused to wash and be clean. It was too absurdly simple.

You will sometimes find it difficult to get patients to catch on to the method. With a little patience you will soon have them rhythmatically expiring, coughing and inspiring and then you will be surprised when you hear a shower of rales that you would have missed without this method.

Occasionally I find a patient who does not catch on. I show them—go through the act myself. I tell them to cover the mouth with a gauze hankerchief and imagine that it is a window pane on a cold morning and to blow the breath out as far as possible (as we used to do as children—blow on the pane and mark with the finger) into the gauze, then give a quick hack or cough and immediately bounce back (fig.) with a fairly deep breath and to keep on doing it each time I move the stethoscope.

To make it easier for the patient, tell him to imagine he has a large mouth bottle in his hand and to blow all his breath into it and then cough and take a deep breath.

Expire fully—cough—and quickly take a fairly deep breath—that's all.

Catawba Sanatorium, Va.

AUTHORS' ABSTRACTS

Medicine

Weights and Measures in the Management of Diabetes. Jas. H. Smith, Richmond, Va. Virginia Medical Semi-Monthly, Vol. 22, No. 17, December, 1917, p. 422.

The dietary needs of a diabetic patient require nice calculation. For a while at least every patient's food should be weighed. Otherwise he will get either more or less than he should have, or he will get a faulty balance in his ration.

The factors concerned are chiefly food intake and body weight, glycosuria and acidosis. The tolerance for carbohydrates should be determined, but equally as important the total intake should be such as to maintain the body weight at a level somewhat below normal.

The quantity of sugar excreted is important, but the standard of a sugar-free urine should be adhered to. Benedict's titration method is reliable for determining the amount of sugar excreted. The patient should be taught to examine his own urine for sugar, and instructed what to do should it appear.

Marriott's technique for determining the carbon dioxide tension of the alveolar air is a simple and valuable means of estimating the degree of acidosis when present.

Detailed data are presented as an outline for treatment, in which Allen's fasting method is recommended as valuable, but not to be applied indiscriminately.

Dietary charts are presented of four patients varying between the ages of three years, nine months and thirty-five years. A very severe case occurring in a child of seven years was apparently doing well at the end of two years.

The opinion is expressed that it is as important in diabetes to begin treatment early as it is in tuberculosis.

The Treatment of Acute Rheumatic Fever. J. Curtis Lyter, St. Louis, Mo. The Journal of Missouri State Medical Association, Vol. 14, No. 12, December, 1917, p. 517.

Lyter says that in the light of modern clinical investigation, acute rheumatic fever is justly considered an acute infectious disease, the organisms gaining access to the circulating blood through some primary focus either obvious or occult.

There is evidently a very positive chemotaxis existing between these organisms and certain body tissues, such as the synovial membranes, the endocardium, the pericardium, the pleura and muscles.

After dealing shortly with the multiplicity of clinical manifestations of acute rheumatic fever, Lyter reports sixteen cases treated at the St. Louis City Hospital by the daily intravenous injections of typhoid vaccine. Within about twenty minutes after each injection the patient developed a chill followed by high fever and sweats.

Usually three such injections sufficed to cure an attack of rheumatic fever. The temperature following the injections would vary from 102 to 107.6°. The most marked improvement was noted in the patients who developed the most intense reactions, as a chill, high fever and a great increase in the leucocytes. The treatment was administered to patients regardless of the presence of any of the ordinary complications, as endocarditis and pericarditis. Also these complications seem to be favorably influenced by this treatment.

The treatment does not prevent a relapse, as relapses were noted to be about as frequent after this method of treatment as after a cure by salicylates. The injection of vaccine was noted to cure a number of patients who made no response whatever to the administration of salicylates.

(Continued on page 362)

TROPICAL DISEASES AND PUBLIC HEALTH

PHYSICAL STATUS OF JUVENILE DELINQUENTS BASED UPON PHYSICAL AND CLINICAL EXAMINATIONS OF CHILDREN IN THE REFORMATORIES OF THE CITY OF NEW ORLEANS*

BY ELIZABETH BASS, M.D.,
and
MAUD LOEBER, M.D.,
New Orleans, La.

The title of this paper is, we believe, self-explanatory. The reason we have chosen this subject is because of our belief in the need of a simple, routine, systematic clinical and physical examination made upon the child before the court has finally committed it to the reformatory. Our work, as outlined below, seems to justify our views. Usually, the physicians who have charge of, or supervision over, children's institutions are prominent, busy practitioners whose duties are numerous and proportionate in magnitude to their prominence, and when the added burden of "attending physician" is thrust upon them we can not blame nor censure them if they lapse into the usually prevailing custom of attending only to those children whom the superintendent or matron deems ill enough to justify the summoning of the physician in charge. Unless this preliminary examination, then, is made, a child in physically poor health, or suffering from a minor physical defect, is more than likely to have his condition aggravated upon being admitted to a reformatory, since the superintendent, or matron in charge, not being trained medically, imposes the same routine of life upon each inmate regardless of his condition; and it is only when these defects with which he has been admitted become aggravated that the notice of the matron or those in charge is directed to them and the attending physician summoned.

We have undertaken this study to ascertain the conditions of the children committed by the court to the reformatories in the City of New Orleans, making note of the salient points which may be elicited in a routine office examination. The thoughts in our minds being: Will such a tentative examination disclose some physical condition which may have a direct bearing upon the crime, or cause of commitment; and should not the court be in possession of the facts as found before the disposition of the case under consideration or trial is made? Much has been written and much work has been done upon the mental status of delinquent children, and we have purposely omitted any mental tests in our work as being beyond the scope of an ordinary routine examination of a busy practitioner, and as needing the judgment of a specialist in that line.

To outline briefly the scope of this examination, we looked into the following conditions pertaining to each child, having in mind that possibly a short time only would be permitted a physician appointed by the court for examining these children prior to their final commitment. With this view in mind, we determined the general appearance, posture, development and nourishment of the child.

Head: Scalp, eyes, nose, mouth, teeth, throat, ears and glandular enlargements.

Chest: Heart and lungs.

Abdomen: Normal or abnormal, distended, presence of masses.

Special: Skin, reflexes.

Clinical: Blood, differential leucocyte count. Malaria, pathological red and white cells and apparent anemia.

Feces: For presence of intestinal ova or parasites.

Special: Wassermann, sputum and urine examinations made only upon those children whose general appearance or physical findings suggested a condition where these examinations would aid in diagnosis.

We believe that such an examination in the hands of the court before the decision of the case would enable it to dispose of these cases in a most rational manner. In

*Read in Section on Public Health, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

the committed cases the co-operation of those in charge of the institutions should be obtained so as to make the work of the child after his admission compatible with his physical health as based upon the clinical and physical findings.

In the words of Drs. McKee and Wells, the attitude of public opinion too often is to consider the child a "miniature adult." Its constitution, they remind us, is not that of an adult; it differs markedly in many respects, both structurally and functionally, from the adult, and for these reasons takes its place as a distinct individual, demanding a corresponding adjustment of its mode of life and manner of treatment.

Such being the case, its mode of life is, and should be, different. The time for and the kinds of work; the time for and the kinds of recreation; the time for and the kinds of food; the time for and the kinds of rest—these should be considered in relation to its development, in addition to those considerations which we usually give to those subjects when we consider time in the ordinary adult individual.

If in our findings we should discover that a child is placed in a reform school because he is incorrigible, and upon our examination we were to find that he has two or more of his teeth so decayed that only the merest shell is left, that fact alone would be to our minds a great contributing factor toward making him incorrigible. Surely a dyspeptic is not gifted with a sweet temper. We are told that bad teeth is a precursor of bad digestion, if not appendicitis and many other obscure ailments. At whose door should the blame be laid for the neglect of these essential organs? Can the parent, guardian, or custodian of the reformatory be without reproach in the disregard of his duty toward his ward? Poverty or lack of funds need be no protector of the delinquent adult here, in this day of free clinics and free dispensaries. And so also does this principle apply, and in many instances more potently, to each physical defect that may exist in the child.

We wish to call your attention to the fact that our scope is simple, yet we believe efficient, and of adequate comprehensiveness to justify a fair outlook for the child by enabling the individual under whose care he may be to have thereby his physical defects corrected, or minimized. We hope that it will prove to be practicable and usable, for we are of the opinion that elaborate examinations in each individual case before commitment would not be practicable. It is, however, only in justice that the essential points should be eliminated and called to the attention of the court. The examination, as given here, consumes comparatively little time for each child.

To enumerate just what this brief examination of ours revealed, we have herewith appended the following tables:

Total number of children examined, 94; boys 71, girls 23.

The ages of the children ranged from 8 to 18 years.

	Boys %	Girls %
Infected eyes	17	0
Strabismus	8	4
Infected ears	4	4
Infected nose	14	0
Abnormal nose (polypus)	1	0
Infected throat	7	0
Mouth breather	7	0
Enlarged tonsils	29	8
Enlarged glands	7	4
Enlarged thyroid	0	34
Decayed teeth (few)	4	13
(many)	32	47
Pyorrhea	14	13
Defective lungs	18	13
Defective hearts	28	52
Abdominal:		
Distension	56	47
Tenderness	21	21
Masses	0	0
Faulty posture:		
Round shoulders	8	4
Flat feet	9	?
Rickets	4	0
Scoliosis	4	0
Curvature spine	1	0
Clubbed feet	1	0
Skin diseases	9	4
Ring worm	11	4
Scabes	1	0
Acne	7	8
Impetigo	1	0
Infected heads	0	4
Tremor	4	
Undeveloped for age	8	0
Never vaccinated	11	4
Intestinal parasites or ova	56	75
1 variety	23	43
2 varieties	23	32
3 varieties	10	0

The kinds of ova found were in order of frequency Tricocephalus trichuria, Ascaris lumbricoides, Hymenolepis nana, Necator Americana, Tenia saginata, and in a few

instances, Strongyloides and Cercomonas hominis.

Blood: Secondary anemia. No plasmodia and no pathological red nor white cells.

From our observations we believe that many of these children who are sent to our reformatories would make better men and women if even this superficial attention were given to them before their commitment by a physician attached to the juvenile court, to be followed up in each instance, according to the opinion of the court, either by the child's natural or rightful guardian, or, should the court deem commitment proper, by the custodian of the municipal or state institution.

Our suggestions, therefore, would be:

1. A conscientious routine physical and clinical examination, with recommendations on the case to the court before commitment.

2. Penalty exacted of the natural guardian in cases of neglect to care for the physical defects of the child or children in his care.

3. Physical and clinical records kept of each child at time of admission into reformatory, and observations recorded once each month thereafter, or more frequently should the case require it.

4. Each reformatory attending physician should have as his assistants specialists in the various branches of medicine, as staff officers, to regularly visit and treat cases needing attention in his specialty.

5. A resident trained nurse.

6. That the diet and mode of life in an institution be passed upon by that institution's attending physician.

DISCUSSION

Dr. Oscar Dowling, Shreveport, La.—The facts presented in the paper just read by Drs. Loeber and Bass are so convincing as to need no argument. Every one at all familiar with the juvenile courts and institutional life will heartily endorse and commend. Any movement which will focus public attention on the question is most timely and most important.

The prison system in vogue is an insult to our intelligence and a disgrace to our civilization, which we call Christian, and there is no feature of the whole system more in need of reform than that which pertains to the juvenile criminal.

Though not complete, there are sufficient data to show the close and intimate relation of mental states to abnormal physical conditions. That defects or bodily pain are the cause of actions often mistakenly called criminal, is clear. Then, logically, the cause should be discovered and the remedy applied. The procedure of our courts, even of our institutions, is based not upon this knowledge but upon the code of the ages when society was ignorant of these facts.

Every court would take cognizance of pain or mental defect as a predisposing cause of crime. No jury would convict an insane person. The figures presented show that a very large per cent. of the children examined were not in normal health.

Institutional life at its best, for the well, is not an environment which gives ideal results; and life in an institution for the physical defective, even with the utmost vigilance, can not be other than trying in the extreme.

I heartily approve the recommendations of the paper; each is important; each imperative. I believe they are practical and can be put into immediate effect wherever public opinion will make the demand. Further, I believe full publicity as to the details of juvenile court proceedings and institutional life will stimulate public sentiment to the degree that the demand will be made.

Mrs. Benjamin J. West, President, National Probation Association, Memphis, Tenn.—I did not mean to say anything in discussion of this very able paper, for I have such a poor head for figures. I just happened to be looking through one of our medical reports, and the only figure I remember in it was that in our local Juvenile Court, in Memphis, there were 1,860 children examined by physicians last year. This was not done by a man paid by the city—we have no paid service—but by our staff of physicians, twenty-five or more of the best men in Memphis, who were willing to give their skill and time to help the poor children of Memphis. And where it became necessary to refer a child to a specialist the very best men in the city were willing to give their attention, and if it required an operation, they gave freely of their skill in that way. That could not be done without the written permission of the child's parents, and very often it was much harder to get the consent of the parents than it was to get some splendid doctor to give weeks and months of his time, sometimes surgical work worth four or five hundred dollars, for the benefit of that child. We had trouble in persuading the parents of the child, but there never was any trouble whatever on the part of the physician. We have had a psychopathic clinic and the best psychologists and psychiatrists in Memphis to take care of our "queer" children. Before the court ever made any disposition of a case we heard from the doctors, as to who in their opinion was the best physician to take the child's case. We have had blood tests. We have had a follow-up treatment carried on by the head of our Medical Department for those poor children, the innocent victims of the sins of the fathers, and today in Memphis I can point with pride to some boys and girls who will be good citizens, strong men and women, because we sought out the trouble, and because the doctors were good enough to cure the children and to set them on their feet with their faces lifted to the light, as we never could have hoped to see them but for the close co-operation that has existed in this city between the doctors and dentists and the special school and the Juve-

nile Court. We have found that it is worth while to look to the physical side of the child before you begin to exact very much of him in a moral way.

Dr. Maud Loeber, New Orleans, La.—I appreciate what Mrs. West has said; some of the work that is being done in Memphis is far ahead of what is being done in New Orleans. I visited the Juvenile Court this morning and saw a record there of a child who had been charged before the court as incorrigible. Among the physical examination records of the juvenile delinquents, the chart of this child showed an evening rise of temperature, a fever curve not unlike that found in tuberculosis. A careful examination had been made, however, and it was found that the child's teeth were in bad condition. After the child had received proper treatment from the dentist, the temperature disappeared, and with it the incorrigibility—for the Court has not had any further complaints against this child.

There was one point I wish to bring out in Mrs. West's discussion and that is that we have had so much trouble in having parents correct a deformity in a child after the doctors have given their time and skill in discovering these defects. In our paper we suggested a remedy, and that is to impose a penalty upon the parents who would refuse to correct these physical defects which are a menace and handicap to the child after they are pointed out.

Dr. A. T. McCormack, Bowling Green, Ky.—That suggestion has been adopted in Kentucky, for the law provides that in case any parent fails to give proper care to a defective child, the child may be taken under the care of the Juvenile Court and given such treatment as may be necessary.

Dr. L. B. McBrayer, Sanatorium, N. C.—This is a very important part of the work, and no doubt everyone here has seen parents standing in the way of the correction of these defects in children. In the school examination law, as passed by the last General Assembly of North Carolina, which law was backed very strongly by the Governor, it was made a misdemeanor if one failed to have these defects corrected when the parents were advised to have this done.

Dr. James A. Hayne, Columbia, S. C.—Have any convictions every been made on that in North Carolina?

Dr. L. B. McBrayer.—The law is just now being put into effect. We have just started this school examination; but North Carolinians are pretty good, and it may not be necessary to do that; but if it is, I am sure it will be done.

Dr. A. T. McCormack, Bowling Green, Ky.—I would like to answer that question because we have done it frequently. Recently in Bowling Green, Dr. McMullen, of the United States Public Health Service, held a trachoma clinic. Out of 66 pointed out by the teachers as suspects 33 of them were found to have trachoma. The parents were ordered to bring the children to the hospital in the city on a certain day, and five failed to do so. One was Vice-Mayor. He was arrested by the sheriff and brought to court, and the fine was suspended on condition that the child be operated upon that day by Dr. McMullen, as his family physician declined to perform the operation. In Pike county, a mountain county, and in Knott county, another mountain county, twenty-four miles from a railroad station, a large number of patients have been brought into the hospital by the sheriff under arrest, with their parents, and operated upon under the direct supervision of the county judge. But in a great many counties the law is not enforced. It is only less dangerous to disobey an order of the State Board of Health to have a sick child cared for than it is to shoot a man.

Dr. Charles L. Minor, Asheville, N. C.—Kentuck is very lucky in having Dr. McCormack there, and I think the present status of health work in Kentucky is owing to the McCormack law.

Dr. James A. Hayne.—That is not in answer to my question. Of course, these trachoma cases were contagious, but it was not to remedy a defect in the child. I doubt very seriously that any jury would convict a parent who refused to allow a certain operation to be performed upon a child, if the parent did not think it ought to be performed.

Dr. Martin E. Taber, Dallas, Tex.—I am an eye, ear, nose and throat specialist, but I am interested in public health. I am very glad to hear this paper, and there is something for me to take home from Memphis. But I would like to say in regard to this question of trachoma that we absolutely counteracted some valuable work's being done among the public school children because of the fact that it was a contested point whether it really was trachoma or not. They got up a row and it knocked out the whole examination of public school children, and so we had better tread lightly in certain states. We are approaching again this question of the medical supervision of public school children, but we will tread very lightly this time and not get into a row and spoil all the good work that might be done. It was an argument between two doctors. One said it was trachoma, and the other said it was not.

Dr. A. T. McCormack, Bowling Green, Ky.—The final decision in Kentucky is left to the Board of Health, and they hear evidence that the court does not hear, and when they order the correction to be made, it is made. We use common sense in taking our cases before the court, and will not take any case where the defect is so slight that it is really not necessary to bring it before the court. But when the defect is sufficient to make Tony steal, we will pull his teeth.

Dr. James A Hayne, Columbia, S. C.—I want to make my position perfectly clear. I am in thorough accord with the necessity of doing these things, but I believe right now that the United States of America is fighting for democracy. There is no country in the world, except Germany, where they have to have specific laws of the government to make the individual in the community conform exactly to what the government wants him to do. I am opposed to government by law; I want government by reason, and I believe we must educate the mothers and fathers until they are willing to do these things. I do not believe trial by jury or convictions of the father

and mother will bring about results along that line.

Dr. Charles L. Minor, Asheville, N. C.—I think all of us to a great extent sympathize with the thoroughly Anglo-Saxon feeling of the Doctor. It is in many ways right, but at the same time we have a great duty on our shoulders. It is absolutely essential that our young shall grow up so as to hand down the proper civilization to the next generation. I confess that in a situation like this we cannot put in the background our feelings altogether, but yet when an ignorant parent stands in the way of his child's health, then I say it is proper to come in with authority and see that the child receives the proper treatment.

Dr. Paul B. Johnson, Washington, D. C.—I am glad indeed that Dr. Hayne came up the third time on that question. I heartily agree with him. However, I do not disagree with the other side at all. I believe that while we must take such steps as Mrs. West, Dr. McCormack and Dr. Minor advise, we must remember that the basic thing is the education that Dr. Hayne stands for. We cannot say to the parent that the child has enlarged tonsils which *must* come out if we know that once in ten thousand cases there will be a local abscess and the child will die. We must do something besides that. I feel we must as medical men make our influence felt to correct the fundamentals, such as the lack of knowledge on the part of these people, which will only be imparted by the tactful visiting nurse, by the sympathetic settlement worker at the gatherings of these women, when they talk over these things. They will talk over the teeth of the child for months to come, but they will also talk over Tony for months to come. One of the best ways to get some of this knowledge before the people and to help educate them is to try to push forward the visiting nurse, the social worker and the settlement house.

Dr. Charles L. Minor, Asheville, N. C.—But shall we wait until the education is complete? If so, we will have to wait a long time. We have been waiting a long time for it, and it is coming slowly. But if we are to wait to save these children until education comes, there will be a good many dead children.

Dr. J. H. White, U. S. Public Health Service, Memphis, Tenn.—The trend of this discussion has gotten me aroused. I do not believe that we should yield a law which is a just and righteous law because there are some objectors to it. How far we can go in the operation and execution of that law against public opinion is another thing, but I want to tell you some of my experience in applying it. About 1895 I had the honor of excluding the first case of trachoma that was ever excluded from the United States. I put trachoma on the exclusion list in the United States. I stood my ground against a storm of execration from the medical profession in the city. I was called all sorts of names, but I do not think there is a single man in the medical profession of the United States today who would not say that I did right. I stood my ground in one case against the highest authority, and while I was overruled, I knew that I had a right to stand my ground against the Devil and all his works for what I believed to be right, and am ready to do it again.

Dr. W. A. Brumfield, Richmond, Va.—It seems to me the comparisons of the workings of this law in this country to Germany is not nearly so good as it would be between this country and Russia. If a majority of the people through their representatives decide that a thing shall be done, then unquestionably the law should be enforced. If we leave it to the individual, in stead of having a democracy we would have anarchy.

I have been a practicing physician for a number of years. I have in mind one case where I was present when a baby was born with one club foot. I offered to go there and bandage that foot each week until it was straight. I was going on Sunday because it was just at the time when I was employed on a salary and Sunday was my only day. I went over one Sunday and found everything all right, and they were willing to have the treatment continued. The next Sunday they were lukewarm in regard to having further treatment. On the third Sunday, when I went to the home, the woman had left word that Sunday was the only day she had to visit and that she could not give up that day, and that I need not come any more. What happened in this case? That girl must go through life a cripple. What is going to become of her I do not know, but she will be a cripple because of the criminal ignorance of her mother. Shall we leave a child like that to the decision of an ignorant father and mother?

Dr. James P. Faulkner, Atlanta, Ga.—There are two or three instances that I have in mind that I think might be of interest to you. Not long since one of our nurses in Atlanta came in one evening and told of a boy suffering from pneumonia, whose parents had declared that the Red Cross nurse could not enter their house; that, if she attempted it, she would have to face a gun. The nurse was, of course, rather perturbed about the situation, but determined to tackle the job the next morning. When she came in at night she said that when she went to the house she met a man out in the yard and pleasantly engaged him in conversation. He proved to be the father of the boy, was not half as dangerous as he had represented himself to be, finally allowed her to go in and seemed to approve of the treatment she gave the boy.

Another incident: Out in the country from Atlanta I was inquiring the way from some small boys, and incidentally I asked if they were going to school. They said that "dad" wouldn't let them go. I asked the reason and was told that their father had been vaccinated some years before and was sick for several months as a result; that there was a requirement in the district that every one must be vaccinated before he can enter school, and that they were getting ready to move out of the district to keep from being vaccinated.

Dr. A. T. McCormack, Bowling Green, Ky.—There are advantages in having that kind of a law. I think the wisdom with which father wrote into this law that the infected population must be brought under prompt and efficient treatment, is a very important factor in the public health of Kentucky. On the other hand, in the juvenile court law there is no trial by jury; the county judge is the whole show. We have a State Home for Friendless Children presided over by George Sehon, a great, intelligent humanitarian leader.

I saw a child brought into Bowling Green two years ago burned badly, whose parents refused to have it treated, and the county judge sent the child to the Home for Friendless Children, where it was treated and got well. I had a child in my practice about twelve or fourteen years ago with a dreadful club foot. Two years ago that child was brought before the Juvenile Court and was sent to Louisville, where she was operated upon, and now she is walking and will have a well-strong foot. I know of instance after instance where children have been taken from their parents and sent to the Home for Friendless Children and operated upon. I also know of instances where, instead of taking them away from their parents, the parents have said that they would see to the child, and proper care has been given. I think it is one of the most important laws we have. I have no hesitation in the world about taking full responsibility for treatment that may kill somebody. Because one or two people out of one hundred thousand die from typhoid vaccination, is that any reason in the world why we should not vaccinate anybody after proper examination? Because in treating a large number of trachoma cases some one may happen to die under an anesthetic, that is no reason for not ridding the state of trachoma; and I would have no hesitation in applying much more radical measures when there is liable to be a spread of an infection.

Dr. Henry Boswell, McGee, Miss.—I do not care to continue this discussion, but the tendency of the discussion has caused me to want to get something out of my system. I want to commend these women for a movement toward a final goal. As I understand, this is only a beginning. They are feeling their way, groping in the darkness, trying to find the light, and I sincerely hope it will be found in a short time.

The discussion has brought out the inevitable thing that always creeps in, and that is the interference with our personal liberty, that always comes up in every fight in this country. There is nothing more objectionable nor more in the way of righteous living than a political life that carries with it the interference with personal liberty. Democracy means that the majority rules, and if the majority says that a child should be cared for in the proper way, then that is true democracy. This idea of interference with personal liberty has stood in the way of the suppression of the opium traffic in this country, and today it is preventing the smooth working of the United States machine, because some fellow wants the dope and thinks he must have it. That same thing stands in the way of absolute prohibition. That same thing of personal liberty, of a fellow's doing just as he pleases regardless of scientific knowledge and scientific doctors, is today standing in the way of wiping out of venereal disease that is a disgrace to human life. It is impossible today in this country to have venereal disease reported, because of personal liberty. Some fellow thinks he ought to be able to go out and infect the future generation. The result is the Juvenile Court, the filled prisons, the reform schools and little children in blind institutions. But personal liberty stands in the way. I say democracy means the majority ruling on a scientifically proven fact.

Dr. Charles L. Minor, Asheville, N. C.—I admire this most excellent talk that the Doctor has made. Much that he has said I approve of heartily, but let us not go too far. After all, the basis of it all is personal liberty. I do not agree with Dr. Hayne, but I can go so far as to give him the right to his personal liberty if it injures no one else. Thank God, the love of personal liberty is implanted in the heart of every Anglo-Saxon and he will not give it up. But you can carry it too far. If the perfection of democracy is to be secured by the sacrifice of all our personal liberty, as the Germans teach, then, gentlemen, let us go slow.

As usual we must strike the happy mean between an unbridled personal liberty and an iron and inelastic state control. Let us hope that America will be able to show Germany where that mean lies.

Dr. James A. Hayne, Columbia, S. C.—I am perfectly willing to substitute the provision that the majority shall rule, but unfortunately in the United States it is not the majority that rules. The majority very rarely come to vote; it is the vicarious minority that makes the law. If it were put up to the majority of the people, and the majority voted for this matter, then the majority of the people would see that these laws were carried out. But it is the very select few, the well educated few, that get together and make rules that they think the majority want, and they pass these rules, and they are very much upset to find out that they have not interpreted the will of the majority.

Dr. Bass (closing).—In answer to the questions of Mrs. West I wish to say that Dr. Loeber and I visited the Memphis Juvenile Court and were very much impressed with the personal interest and attention given the children by the probation officer and her assistants.

We were told that frequently when children were ready to be discharged from the court they plead and often cried to remain, the environment having been so interesting and attractive for the little offenders.

In regard to the various infectious diseases, our paper was intended primarily to stress the fact that the delinquent child should have a careful physcial examination, the kind that any general practitioner is able to give without a great expenditure of time, so as to prevent the child with some infectious or contagious disease from carrying such infection into the home where other inmates would likely become infected. Besides the acute infectious diseases we would prevent the spread of such infections as scabies, alopecia, favus, chicken pox, etc., conjunctivitis, intestinal parasites, malaria and a number of other preventable diseases.

THE ADVANTAGES OF A SANITARIAN TO A RAILROAD*

By Albert E. Campbell, M.D.,
Health Officer, Illinois Central Railroad,
Chicago, Ill.

Large industrial organizations are beginning to appreciate the value of promoting the efficiency of the individual employe. The experienced employe is one of the greatest assets of any industrial organization, and the problem is how to keep him employed at his work the greatest number of days in the year, and how to keep him physically fit and consequently at his highest state of efficiency.

The Illinois Central and Yazoo and Mississippi Valley Railroad companies have well - developed hospital departments through which the employees, for a small monthly contribution, receive all medical and surgical care. Careful attention is also given to sanitary measures as regards both working and living conditions of the employes.

Along the lines of the Illinois Central Railroad, malaria was formerly so common that in certain sections 40 to 50 % of the employes would be incapacitated at times by that disease. We early began the use of quinin as a prophylaxis, and we have found that, by administering twelve-grain doses of it twice a week to all employes, we can absolutely prevent the development of malaria, even though individuals may become infected.

Accidents at our shops were of very common occurrence until we entered upon a campaign of "safety first," covering all dangerous machinery, such as belts, saws, cutters, and so forth. Thereafter we soon noticed a decided drop in the number of accidents.

The drinking water at all our shops was looked into. At one point a great deal of sickness had developed, and it was found that all drinking water was taken out of a surface well with a chicken yard and an outside surface privy quite near, both draining toward the well. The city water was fully three-fourths of a mile distant. We equipped eight large whiskey barrels with hinged covers on top and faucets at the bottom and hired a Negro with a wagon to haul four barrels of city water in the morning and four in the evening and distribute it in the shops. After that we did not have one case of bowel or stomach disturbance. The Company continued to pay for this service for eighteen successive months before the city water was brought out there. At other places the water, which was taken from rivers or ponds, after a heavy rain became quite murky and unfit for drinking. This water was sedimented and then sterilized with lime, according to the attached blue print, much to the delight of all our employes. Now we use lime to sterilize all drinking water. As we had a great many wells in southern Illinois that were grossly polluted, it occurred to me that we might purify the water in them by the addition of lime.

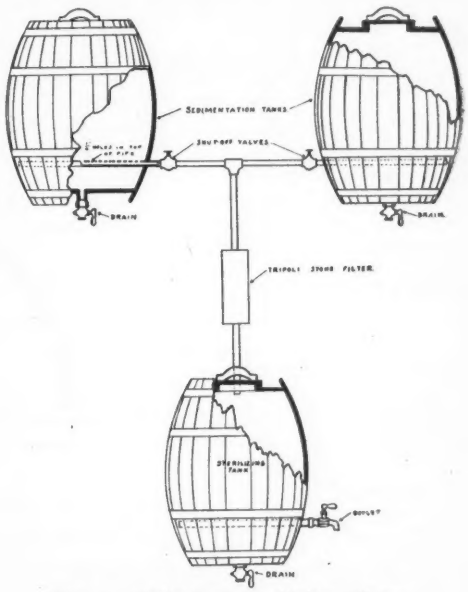


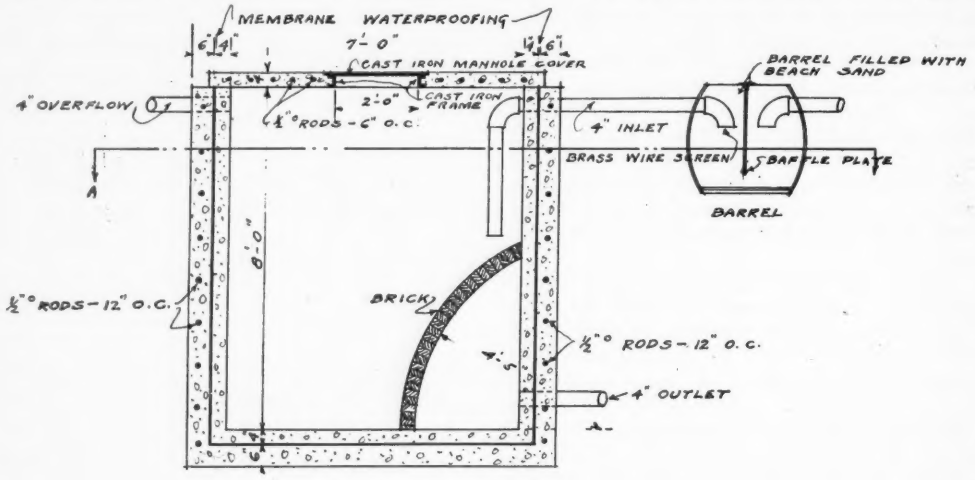
Fig. 1—Method of Purifying Water.

Three public wells were selected for tests and chlorid of lime added according to the estimated amount of water in each well. It is quite evident from the amount of free chlorin present at the time the water was first examined that too much lime was added, the test made four and even six weeks after the first sterilization

*Read by title, Section on Public Health, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

showing the water to be free from organisms. The State Water Survey, which kindly made these tests for us, said: "It is rather interesting to note that only those waters showing available chlorin contain no gas-formers. We are not certain just exactly what is the significance of this result." The drinking water all through southern Illinois comes from shallow wells, nearly all of them showing gross pollution, and although we had a sign on each of our wells, "The use of this water for drinking purposes is forbidden," still our employes and the traveling public continued to drink the polluted water, and we

today recognize the fact that employees work to better advantage and with greater speed and accuracy if their surroundings are cheerful and well lighted. In considering a lighting installation the subject of brightness should never be overlooked. The investigations of Prof. C. E. Ferree, of Bryn Mawr Psychological Laboratory, indicate that after three hours of work under daylight, the eye loses approximately 5 % in efficiency; under the indirect system the loss is about 7.5 % during the same period. However, under the semi-indirect and direct systems the loss reaches over 70 %. This latter loss is due to direct glare



CROSS SECTION

Fig. 2—Details of Waterproofing Cistern—Cross Section.

felt that we should do something to lessen this danger.

In some cases we have had to resort to water-tight cisterns and Fig. 2. is what we are now using. You can see that the incoming water has to pass through three feet of sand before entering the cistern, and it then passes through a brick wall before being pumped for drinking purposes, so that the rain water is well purified. This style of cistern has been approved by the Public Health Service.

At one of our large terminal offices the room used was an inside room and artificial lights had to be used all day long. This direct light became injurious to the eyes of all employees. Efficiency engineers from polished surfaces, desk tops and so forth. Hence we have installed the indirect system at many of our terminals and also in our new office building at Sixty-third Street, Chicago.

At one of our shops our employes were greatly annoyed by small insects that swarmed through the place, lighting on the victims' faces and hands. We sent samples of them to the Bureau of Entomology at Washington, which informed us that they were the white ants, insects very destructible to wood, — cedar, water tanks, railroad ties, and all wood in the building. They advised that we remove all flooring in the shop, soak the ground with

kerosene, and substitute for flooring creosoted blocks. This was done, the great annoyance removed, and an insect pest destroyed that might have proved very expensive for the Company.

We have abolished the scavenger.

When any of the vaults of our outside closets need cleaning, we remove the building, cover all excretions with waste, cobs, wood, creosoted ties, sprinkle all with kerosene and burn, using some tar to keep down the odor, keeping a hot coal fire over the contents for some time. It is surprising how the contents of the vault will disappear. I do not believe there is near so much human waste in vaults as appears. The pit is now filled in and a new one dug

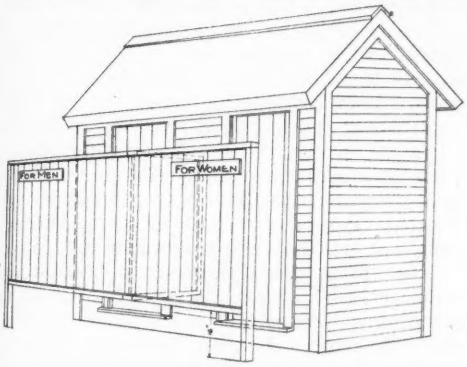


Fig. 3.

eight feet deep and six inches of chlorid of lime put in the bottom. This has worked well with us and has had the unqualified endorsement of all municipal and state officers. We keep our privies dark, and, as it is very difficult to keep them screened where this is desirable, I have thought it advisable to have them painted black inside, as this will tend to keep out flies. The doors to all outside toilets should be separated and both screened from view and properly designated—"For Men," "For Women." The waste from all construction crews is also watched and all are provided with a portable toilet. On one division this toilet is now made in one piece, as when sent out knocked down the different pieces get lost.

At some of our terminals we were greatly annoyed by having the ladies' toilet overflow due to heavy cloths being thrown into the hopper. We have adopted and standardized a can to be used in all ladies' toilets properly stenciled: "Ladies' please throw cloths and other refuse in this can and not in hopper." This has lowered our plumbing bills enormously. At one terminal we found fifteen cloths in this can in one week.

At many of our large shops the iron and steel filings are collected and placed in a bin. As a lubricant or cutting compound, they use: mineral oil, 8 gallons; soda ash, 10 pounds; water, 90 gallons. Mineral oil is composed of lard oil, 25 %; mineral oil, 75 %. The latter is a paraffin oil. The filings became so hot that they could scarcely be handled even with a long-handled shovel. This matter was referred to the Bureau of Chemistry, at Washington, and they advised us to wash off the oil from the filings before placing them in the bin, as they surmised that it was this oil that caused the oxidation. Another chemist suggested that there might be a union between the two metals which caused an electric current. In any event, we remedied this by installing a large perforated gas pipe in the center of the bin, which carried off much of the excessive heat.

Another advantage to the employes is in getting their wants before the General Manager, as my reports are made out in triplicate—one to the General Manager, one to the General Superintendent, and one to the Local Superintendent. Thus the needs or desires of the employes are brought direct to the Management. Laborers complained to me that their living quarters were cold and scarcely fit to live in during cold weather. I made a tour of every laborer's shack on that division, in company with the Supervisor of Buildings, and made a detailed report of every one, and within two months every shack on that division was papered with tar paper, lined and refloored, and painted throughout, much to the comfort and better feeling of the laborers. One laborer said he had "the finest bungalow now in the town." Another said, "I have a nice home to live in now."

The ventilation of all waiting rooms and ticket and general offices received due attention. All waiting rooms in stations are ventilated by lowering the upper sash win-

dows that are opposite to prevailing winds. In this way the air is kept at an agreeable temperature. In general offices where there are one hundred or more clerks, weights are placed on all papers and windows are thrown open at 10 A. M. and 3 P. M. each day, while the clerks stand up and walk around and are much refreshed. Our slogan is: "Open the windows and the bowels and you can defy the microbes that cause colds, but keep the feet dry and warm." In ticket offices, the draft coming through the ticket window causes frequent colds. In fact, at one terminal this draft was the cause of six cases of pulmonary tuberculosis' leaving the office, three of which died. This draft can be overcome by having other openings, as a transom over the door, or a lattice work over the ticket window; thus the air is subdivided and the strong draft controlled.

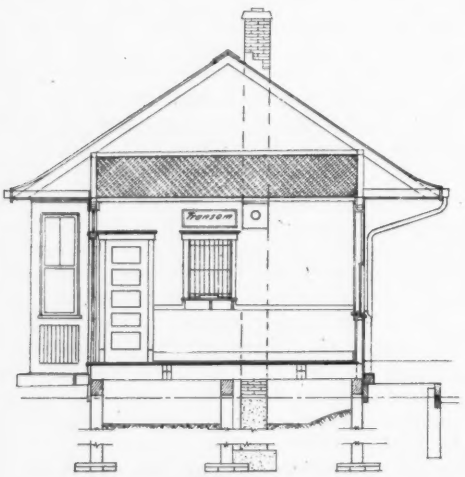


Fig. 4.

The large offices are surveyed for the detection of early cases of tuberculosis, and if any employes seem to be in declining health they are examined, treated, and stationed near a window. Clerks who are thin and anemic are treated and built up, probably given a vacation or a change in their work.

ADVANTAGES TO THE TRAVELING PUBLIC

Railroads have never had any system of cleaning their stations and toilets. They were cleaned by the section men when the agent thought the places were dirty, or when some passenger complained. Then they were left until another complaint reached the agent or a member of the management. We adopted a regular routine of scrubbing terminals every second day, county seats and junction points twice a week, and all other stations once a week, according to travel. The floors and toilets of all terminals, county seats, and junction points should be swept twice a day, and toilets scrubbed twice a day. At all our stations the raising of dust when sweeping was a question that had to be met. We had a preparation put up at our largest shop composed of ocean sand, salt, sawdust and arctic engine oil. This preparation, besides keeping down dust, possesses cleaning properties that make it valuable. A method used by some of our agents in sweeping is to put an ordinary gunny sack over the handle of a wide pushbroom, so arranged that the handle is through the centre of the gunny sack; turn this over and under the pushbroom, and dampen the sack with kerosene oil. By this means dirt can be very readily removed without the raising of any dust.

The water and ice used on trains are watched with great care. At one large terminal where many trains were watered, the city water became polluted, due to floods in the South. We were on the ground at once, had a sand-and-charcoal filter built, and all water used was passed through this, then into a large tank, where it was boiled for twenty minutes with hot live steam. Then the water passed over ice manufactured from distilled water and put in the coolers. All coolers were washed out with boiled water, and the hands of attendants were also washed with water that had been boiled. During all that period we did not have a single complaint from passengers going over our line, although we heard frequent complaints from people traveling over competing roads.

At one terminal used by two large railroads the only available drinking water came from a spring which had an environment indescribably bad — outside surface privies, chicken yards, hogpens, and kitchens all draining toward this spring. Examination of this water showed 23,000 bacteria to the c. c., and four ounces of

lime was added. This spring was walled to a height of about four feet. Ten hours after adding the lime a sample of the water was examined and found absolutely sterile. Two weeks later another sample was examined with the same result. When I took the cover off the spring at this time, the odor of lime came up into my face. We had a water cooler put in this waiting room and had the water sterilized for the use of passengers. At all our junction

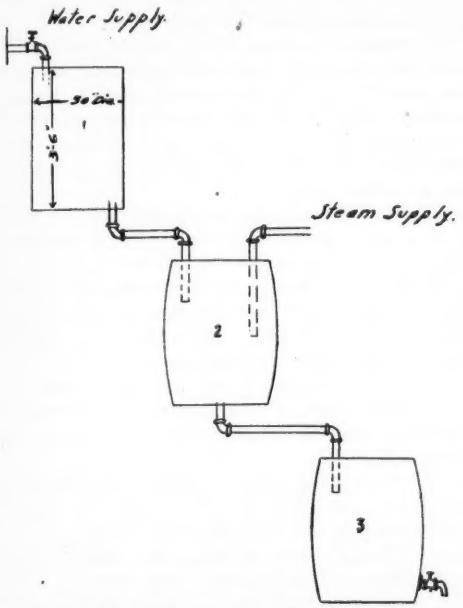


Fig. 5—Method of Treating Water for Trains During Flood Times.

1. Galvanized Iron Tank. Charcoal and Sand Filter.
2. Wood Barrel. Filtered Water Boiled with Live Steam.
3. Wood Barrel. Filtered and Boiled Water Cooled with Ice Manufactured from Distilled Water.

points where interstate passengers wait for trains we watch the drinking water, and if polluted, have lime added to it and the cooler stenciled "Sterilized Water." In this way the railroad is helping the public health service as well as the traveling public. All our section crews in this part of the country carry a lime solution and are instructed how to sterilize any water they may use.

We are also watching the drinking water used at all our restaurants, even if our trains are not watered at these stations. At one large terminal, where fully five hundred persons ate daily at the restaurant, examination of the drinking water showed three thousand bacteria on gelatin and ten thousand on agar. The Manager was at once notified; arrangements were made to have all the drinking water sterilized in a large cooler, and all drinking water served to the public taken from this cooler. The hands of our waitresses and the dishes used are washed with water that has been boiled. Doubtless many cases of typhoid fever are due to infection from the water used at public restaurants, whether in cities or in country towns.

The ventilating of trains is also attended to. On our suburban trains during rush hours we see that the rear end sash is open. When the train is standing full we have the sash of front and rear doors open. In this way the air is being constantly changed. But the heating of trains in both Northern and Southern climates is often very perplexing. If there is ninety pounds of steam required to maintain steam through a long train in the North, this amount in a Southern climate will keep the train entirely too warm unless the temperature is controlled by train crews south of the Ohio River. Here are good rules to observe:

1. When the temperature reaches 75° with the train moving, turn off the steam on the sunny side or on the side of the train opposite the prevailing winds.

2. Keep the transom of the rear door open always when there are many passengers in a coach. It should always be open when the train moves, but should be closed when the temperature reaches 70°.

3. Avoid drafts on a cold day. Do not open the transom on the side of the train when the wind is blowing against it. Keep the front door on all suburban and through trains closed, unless you wish to cool the coach quickly.

4. If passengers complain of excessive heat, remove them to the outer end of their seats or to seats near the door.

5. If a temperature of 75° is maintained in a rapidly moving train, there will be no complaint, since the temperature drops as the speed of the train is increased.

If these instructions are followed, there

will be few complaints. All steel coaches running South should have ceiling paddle fans, as steel becomes very hot. It would be much more sensible for railway commissions to take action on such a question as this instead of attempting to force railroads to screen their passenger coaches, for screens simply keep flies in a train and gather flies as the train proceeds. The cleaning of trains in transit becomes very necessary when a train travels overnight. We have adopted a plan by which each division train crew clean up the entire train before turning it over to the next train crew — and our trains are now kept clean. The water coolers on trains should have separate apartments for water and ice, and the pipe carrying the melting ice water should come across the lower part of the water cooler so as to cool the drinking water as it escapes.

THE FOOD

The restaurants along the line needed attention, and it was found in many places that one-half of all the refrigerators were unable to maintain a temperature of anything lower than 55°, and that sensitive foods, including milk and cream, were kept with vegetables and fish. No attention was paid to the proper cleaning of ice boxes, as it was no person's business to attend to that part of the work. Grease traps were full to overflowing, and when emptied were put back into the sewer. The chefs on all private cars had everything in confusion. The ventilation in the kitchens of our diners was such that it was a wonder that any human being could live and work in them.

But we brought about a change in all this. Now all food is covered at all restaurants, ice boxes are watched and kept clean, new refrigerators have been installed at many of our stations. The ventilation in our new diners is much improved. The upper half of the door entering the kitchen is open and screened; a canopy is over the stove and an exhaust fan over the canopy. Twenty-eight diners leaving Chicago or other terminals are examined regularly. Officers' cars, fourteen in all, are also carefully inspected. As there is no conductor in charge of these cars, the chefs become very careless, and often I find everything in confusion, hence the following instructions were issued to all chefs on diners and chefs on private cars and all handlers of food at restaurants:

1. Keep all dairy products, such as milk, cream, butter and cheese, in one compartment. Cheese should be in a box on the upper shelf, and if possible, butter on the lower shelf.

2. Keep all bakery goods by themselves; pies should be kept in a locker, cookies wrapped in paraffin paper. Neither of these need necessarily be in the ice box.

3. Keep all meats—beef, pork, veal, and mutton—in one compartment, and as far as possible in the bottom of the cooler on a clean cloth. Chicken can be carried with meat provided that heads and feet are covered and the fowl separated from meats by a clean cloth.

4. Fish should be wrapped in a clean towel and packed in ice. No other food should be near it.

5. Lettuce should be trimmed and sprinkled with water and carried in brown paper or paper bags. All other vegetables should be carried in sacks.

6. Conserve all food; permit no waste. All trimmings of meat should be used in entrees or for soup stock as soon as trimmed.

7. Watch for decay in meat and chicken. If meat assumes a dark color, or smells bad, trim it off and use it at once.

8. Watch your ice box; go over it daily and clean it carefully. Arrange all food as here directed, as far as possible, and you will have no trouble.

The carriage of meat and produce on diners during the hot months of summer is a very difficult problem, owing to the close proximity of the fire to the cooler; and as the door is so frequently opened during the preparation of a meal the temperature of the cooler sometimes falls 10 to 15° in one hour. For this reason railroads should control the eating houses along their line, so that all meats can be exchanged and a fresh supply carried on the diner.

EFFECT OF FISH ON DRINKING WATER

We were asked as to the effect of fish on drinking water, as the Company is building an immense dam in Kentucky and expects to use the water supply thus ob-

tained not only for engines, but also for drinking water at our shops and for watering our trains at that point. It is proposed to introduce fish into the reservoir. We insist, however, that fish do pollute water, and if they abound in small lakes or water which is dammed, their pollution becomes a serious matter, calling for some form of treatment. Besides, fish bring fishermen, and fishermen in boats are liable to pollute the water in many cases.

Some years ago the city of Boston had large reservoirs built, and at one time considerable boating was permitted upon these waters. Besides, the grounds around these waters were parked with drives and pathways. A great many people used these grounds, and at times considerable gross human pollution was present in the parks, every rain washing some of this refuse into the dam. All this, however, has been changed; no boating on these dams is permitted, and the use of the grounds immediately surrounding reservoirs is prohibited, thereby eliminating surface pollution from these sources.

New York has its watersheds probably sixty-five miles from the city, and not only are the lakes, rivers, and so forth, under sanitary supervision all the time, but the territory draining into these bodies of water is constantly under sanitary supervision. Not only, then, should no fish be put in this lake, but it should be protected from human visitation, and the grounds around it should be likewise guarded. We have, therefore, advised against adding fish to our dam.

THE ADVANTAGES TO RAILWAY OFFICIALS

It may be asked why railway officials, as they go over the line, can not look after much of the work here outlined. But railway officials look through business glasses, while the sanitarian looks through sanitary glasses; and I can say frankly that sanitarians know much less about engines and the proper curve in track than railway officials do about sanitary measures. But the greatest value to the management is increased efficiency and a better feeling between the laborer and the operating department. One of the benefits is that of personal contact. Anarchy reigns in the human heart, many laborers stumble along aimlessly without any direction, and are ready to ask: "What do the railway officials care for me?"

CONTROL THE THOUGHTS

This attitude of mind on the part of the laborer becomes a habit, and is liable at any critical time to cause a loss which can not be measured in dollars, but which is an index of a constant indefinite loss. Too much attention can not be paid to the subject of personal contact, although extreme care must be exercised not to carry this too far. Nothing, it seems to me, is clearer in the advanced psychology of the day than that the mind is the highest power we possess. Modern science has proved that intelligent thought is not confined to the brain cells, but that we think all over. One reason why our mental attitudes, our hopes, our fears, our joys, our sorrows, have such tremendous influence upon our bodies and our lives is that, as Edison says, every cell in us thinks.

The mind, then, is the product of activity in all the cells of the body. These little cells are like members of a great orchestra who instantly respond to the keynote given them by their leader. The ego is the master spirit; it can think discord or harmony into all the cells of the body. It can think efficiency or inefficiency into them, masterfulness or weakness.

If, then, we teach the laborer that we are providing him with good drinking water, plenty of fresh air, good sanitary surroundings, we tend to control his thoughts in a great measure. But mental food and hygiene must also be provided for. Papers and magazines should be within easy reach, and club rooms should be provided.

The development of sanitation offers advantages for educating the laborer in sanitary measures. If he is surrounded in the workshop or office by ideal sanitary conditions, he is thereby made capable of comparing these conditions with those that obtain in his home. In this way men are unconsciously led to desire a higher environment. The personal relation of the sanitarian to the worker in the office or workshop is a means by which the principles of personal hygiene are so inculcated as to be applied and not regarded as fads of the medical profession. For on all sides

of the worker there will be shining examples of the results of the work of the sanitarian, of the application of the principles of hygiene. In this way the railway managers have at their control a means of popular education which can hardly be excelled.

Within the past year we have taken up another educational feature which I am confident will prove of incalculable benefit to the management, that of giving instruction in first aid to the injured. One of the laborers is taken as an object lesson. He lies on the ground as if he had been run over by a train. All laborers are shown how to make him comfortable, how to carry or remove him from wreckage, how to warm him, how to arrest bleeding; step by step they are led through the methods of rendering first aid to the injured man. This training has been given at every shop in the entire system. The men are reminded that the management is interested in their welfare, not only anxious to prevent accidents, but likewise to teach what ought and what ought not to be done. That is not only educational, but it is welfare work, and work which, if it is to be permanent in its operation and lasting in its results, must be founded upon the bed rock of education.

With these aims in view, our employees are addressed in kindly words about their own work, and they are also made acquainted with the burden of care and responsibility borne by the management. They are frankly told that responsibilities in the railway service gravitate to the person who can shoulder them, and power flows to the men who "know how."

Each month in our magazine we have articles on "Sanitation and How to Live," for we believe in teaching our employes how to live as well as how to make a living.

These are but a few of the things a sanitarian can do for a railroad, and my only purpose in presenting these practical points is to call the attention of serious, thoughtful railroad officials to a badly neglected field which requires the full attention of an active sanitarian.

AUTHORS' ABSTRACTS

Medicine

(Continued from page 348)

The Adult Thymus and Its Two Types of Dysfunction. George Howard Hoxie, Kansas City, Mo. The Journal of the Missouri State Medical Association, Vol. XIV, No. 9, September, 1917, p. 389.

The author had two cases of myasthenia with submanubrial dullness and X-ray shadow operated upon and some thymic tissue removed. The microscopic study of these when compared with specimens obtained post-mortem in other conditions led him to accept Hart's dictum that there are two types of hyperplasia. Hoxie, however, carries Hart's conclusion further and defines the symptomatology of the two types. The first or primary hyperplasia is one of the epithelial (or endothelial, if you prefer) elements and is accompanied by a symdrome reminding one of myasthenia. The second type, a hyperplasia of the lymphatic elements, is a reaction to systematic intoxication or disease. The treatment of thymic myasthenia calls for the weakening or destruction of the thymus, with a concomitant strengthening of the other endocrine glands.

Some Differential Reactions of Coli-Like Bacteria. Max Levine, Ames, Iowa. American Journal of Public Health, Vol. VII, No. 9, September, 1917, p. 784.

The group of aerobic non-spore-forming lactose fermenters is divided into two classes on the basis of the end-products of the fermentation of glucose.

The true coli group constitute those organisms which when grown in 0.5 % glucose, peptone, dipotassium phosphate solution for 3 to 5 days at 37 C. give an acid reaction to methyl red, and do not give any coloration when the culture is mixed with an equal volume of 10 % KOH and exposed to the air for 5 to 24 hours (V. P. test negative). These organisms are characteristically of fecal origin and are rarely, if at all, found in nonpolluted sources.

The ærogenes-cloacæ group are alkaline to methyl red, and give a distinct pink or eosin-like coloration when treated with KOH as described above (Voges Proskauer test positive). Organisms of this type are rarely found in feces and are quite abundant in nonpolluted sources such as soil and grains.

The differentiation on the methyl red and Voges Proskauer reactions is well correlated with the habitat of the types and therefore is of considerable sanitary significance. For differentiation within the groups the fermentation of sucrose, glycerin, starch and salicin and motility were found most serviceable and significant.

SURGERY

WAR, RAILWAY, INDUSTRIAL, GYNECOLOGICAL, OBSTETRICAL AND UROLOGICAL.

SURGICAL WORK AT A CASUALTY CLEARING STATION*

BY T. H. GOODWIN, C.B., C.M.G., D.S.O.,
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EDITOR'S NOTE.—*General Goodwin was selected to accompany Mr. Balfour's mission to the United States in April, 1917, and on arrival was attached to the office of the Surgeon-General, U. S. War Department. He was promoted to the rank of Colonel in December, 1917, and in January, 1918, was directed to return to England; and on arrival was promoted to the rank of Major-General and appointed Deputy Director General, Medical Service, at the British War Office. On March 1, on the retirement of Sir Alfred Keogh, General Goodwin was appointed to succeed him as Director-General of the Army Medical Service, with the rank of Lieutenant-General.*

In the Tirah campaign on the Indian frontier General Goodwin was awarded the Distinguished Service Order for conspicuous service.

During the present War the King conferred upon him the Companionship of St. Michael and St. George for distinguished service; and early this year he was made a Companion of the Bath, one of the highest honors awarded by the King.

As Director-General of the Medical Service, General Goodwin is in a position analagous to Surgeon-General William C. Gorgas, of the United States Army, and controls the administration of the whole of the medical service of the British Army, both at home and abroad, with the exception of India. The administration of the Medical Service in the various theatres of war is vested in Directors of Medical Services, but the Director-General is responsible for the provision of the necessary personnel and equipment for the care of the sick and wounded as well as for the means for the prevention of disease.

It will be recalled that at the Memphis meeting of the Southern Medical Association in November, 1917, Lieutenant-General Goodwin was elected one of the only two honorary members which the Association has ever created.

I have been asked to speak to you this evening on some subject connected with the War. Various topics were suggested, and the one on which we decided was "Surgical Work at a Casualty Clearing Station." Personally, I was rather in favor of this subject and for the following reasons: first of all, a "casualty clearing station," as we call it in our Army, very closely approximates in position, in organization, and in function an "evacuation hospital" in your Army. Consequently, any information which I give you with regard to our casualty clearing station is quite applicable to your evacuation hospital, and may possibly be useful to you in considering the latter unit. In the second place, a casualty clearing station is a unit which has developed enormously during the present War, and very little literature exists on the subject. In the third place, the work carried on by this unit is of extreme importance not only to the medical service, but to the army as a whole.

With regard to the personnel of a casualty clearing station, our war regulations lay down a definite war establishment for its composition.

The establishment of a casualty clearing station consists of a lieutenant-colonel, R.A.M.C., in command of the unit; six other medical officers; one quartermaster; eight sergeants; seven corporals and sixty-two privates. There are three chaplains, one interpreter, and six Army Service Corps drivers (mechanical transport) attached. The transport consists of three three-ton lorries.

The sergeants are allotted for duties as follows: nursing duties, 2; steward, 1; dispenser, 1; cook, 1; pack storekeeper, 1; clerk, 1; and general duty, 1.

Two of the privates are trained in the use of carpenters' tools.

Nursing sisters[1] are appointed, whenever circumstances permit, to a casualty clearing station.

The casualty clearing station forms a connecting link between the field ambulances and the stationary and general hospitals. It receives patients from the field

*Read in General Session, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

1. The term "nursing sister" in England is equivalent to our "trained nurse" and has no reference to a religious order.—Editor.

ambulances by means of the motor ambulance convoy, and it transmits them to the stationary and general hospitals by means of the ambulance train. It will readily be understood that the functions of a casualty clearing station must necessarily be very elastic; during periods of comparative inactivity they may act more or less as an advanced stationary hospital, transmitting only such patients toward the base as are unlikely to be fit for duty within a reasonable period, while during a period of active battle it acts as a sieve, winnowing the patients according to the severity and the nature of their injuries to the base, the rest station, etc. Again, a casualty clearing station may be allotted special functions. For example, one casualty clearing station may be detailed to deal entirely with cases of abdominal wounds, such patients being brought as rapidly as possible from the front to the special casualty clearing station, and there operated upon and retained until transported to the base. The position of a casualty clearing station in the area of operations must necessarily vary with the military exigencies for the time being.

The unit will almost invariably be situated close to a railway station and within from five to ten miles of the front line, but may not infrequently be pushed further forward than this in order to lessen the journey of patients by road as far as possible.

In European warfare, buildings will be utilized as far as possible, but very frequently the accommodation will necessarily be in huts, in tents, or in a combination of all three.

An important point to remember in the establishment and organization of a casualty clearing station is that it must be capable of rapid and very considerable expansion. Ordinarily it is equipped for two hundred patients, but it may at short notice be required to accommodate a very much larger number. Consequently it should always be insured that suitable ground is available for the erection of tents and that any available buildings are prepared for conversion into wards, should the necessity arise.

It will be found advantageous to organize a casualty clearing station into the following sections or departments: reception; cooking; pack store; and nursing and operating.

Arrangements for the reception of patients must be carefully organized in order to prevent any possibility of confusion when large convoys of wounded arrive. There should be a wide and clearly-marked entrance for motor ambulances, with an equally clear separate exit to the same road. This is necessary in order that ambulance vehicles may enter, unload their patients at the reception hut or building, and depart without being obliged to turn around or to cause any delay or obstruction to the vehicles behind.

A stretcher party must always be on duty night and day in order to unload patients promptly on arrival. In the reception rooms the patients are seen and divided into groups, the lightly wounded being sent to one department, the seriously wounded to another, patients requiring immediate operation to another, and so on. Each department is worked by its own staff and during active operations the personnel will be kept extremely busy.

The reception room must be of ample dimensions, as many hundreds of patients may arrive at the same time and must be rapidly and efficiently dealt with. The admission and discharge books are here filled in by the clerks detailed for this duty.

The kitchen department must be complete in every detail; diets for every class of patients are required daily. Soups and other hot drinks should be available at any hour for patients on arrival.

The patient's arms and equipment are taken possession of, tied into bundles, labeled, and placed in the pack store.

The nursing department comprises the "hospital" section proper of the unit. Wards should be organized and equipped for each class of patients; those for patients requiring operation being in close proximity to the operating theater, while those for patients less seriously wounded may be more distantly situated, possibly in tents. The operating room, roentgen ray room, and "serious surgical" wards should be close to each other and conveniently situated.

Lastly, the accommodation, comfort and

feeding of the personnel of the unit must not be forgotten. No pains should be spared to insure the comfort and well-being of the medical personnel, every member of which will be extremely hard worked. Nursing sisters especially are rather prone, if permitted, to neglect their own well being, and will cheerfully put up with any discomfort, and possibly neglect their meals, while at the same time working themselves to the point of exhaustion in the interests of their patients. This self-sacrifice is most laudable, but is certain to lead to breakdown if unchecked. It will consequently be necessary for the commanding officer of a casualty clearing station to insure that the nursing sisters have comfortable quarters, that they have a due proportion of rest and sleep, that their meals are well cooked and served, and that there is due insistance that they obtain their meals regularly, otherwise during a period of stress it may be found that sisters and nurses will, if permitted, work for twelve or fifteen hours at a stretch without food or rest.

It must not be inferred that work in a casualty clearing station is in a continuous condition of high pressure. During battle periods the amount of work to be got through is enormous, the operating work especially being very onerous, and every member of the personnel is working at extremely high pressure. But during the comparatively quiet intervals matters are much easier, and it is during these intervals that very much may be done in the way of organization in order to prepare for the busy days and nights in the future.

Finality has not been reached. Improvements and innovations are constantly being introduced, and our results, due to more efficient medical organization, are very much better today than they were two years ago; and I have no doubt that further considerable improvement will be shown in the future.

I have given you only a brief outline of the organization and functions and general surgical work at a casualty clearing station. Personally, I look upon the casualty clearing station as presenting the most important medical and surgical work of any unit in the medical service. All cases go through the casualty clearing station, and it is there that the most important surgical work is performed.

From the foregoing you may readily understand how vitally necessary it is to have ample medical reserves of personnel for a modern war. It is not only the personnel as laid down in "War Establishments" which is required; in addition to this a very considerable trained reserve is necessary in order that casualties may be replaced and reinforcements furnished when required.

The operating staff sometimes has to work for many days and nights in succession. But there is a limit to human endurance, and such staffs must be re-enforced and relieved, and care must be taken that the members of these staffs are not overworked. Hence the great necessity for reserves.

This war is vitally important to your country, to your whole future, to your very existence as a nation. You will pardon me, I am sure, if I beg of you to realize that no effort must be spared. You will require in your country just as we required in England that every man put his whole effort into the War and do his very utmost to bring it to a satisfactory conclusion.

I would beg you not to believe any of the stories you may hear, or may have heard, as to the War's being nearly at an end, nor as to the enemy's having lost his morale and being at the point of surrender. I have seen three years of this War, and I expect to see many more years of it. The German is not nearly at the end of his resources. I am not pessimistic. I can only see one end to this War, and that is the end which we all hope for. I absolutely refuse to contemplate any end to this War other than a termination which is victorious for us. The reason I refuse to contemplate any other termination than that is simply this: that I utterly decline to contemplate the possibility of your great nation adopting any other measure than that of entering fully and whole-heartedly and with every man into this War.

THE IMPORTANCE OF RECOGNIZING THE WEAKNESS OR THE OBLITERATION OF THE CONJOINED TENDON IN OPERATIONS FOR INGUINAL HERNIA

By Joseph Colt Bloodgood, M.D.,
Baltimore, Md.

The interest in operations for inguinal hernia will be revived due to the fact that in the Selective Service Regulations registrants with small reducible hernia are accepted for general military service (Class A) subject to immediate call, and registrants with larger or irreducible herniæ, otherwise physically and mentally fit, are accepted in the deferred remediable group (Class B) to be called by the Provost Marshal-General when cured of the hernia by operations under the supervision of the Surgeon-General.

In the *Journal of the American Medical Association* (February 23, 1918, Vol. 70, p. 515) I called attention to "Some Herniæ that Disqualify for Military Service Whether Operated On or Not." In 1899 *(Johns Hopkins Hospital Reports,* Vol. 17, p. 277) I published the results of a very thorough investigation of almost 500 operations for hernia. During this investigation I discovered that the chief cause of recurrence in the lower angle of the wound was the obliteration of the conjoined tendon. This type of hernia was observed in about 5 % of the cases and the failure to cure in this group was almost 50 %.

In 1898, I devised the scheme of transplanting the rectus muscle to strengthen the lower angle of the wound—a method independently discovered by Woelfler. Later Professor Halsted, of Johns Hopkins, modified the method by turning down a flap of the anterior rectus sheath. These methods improved the results, but there have still been recurrences.

I have just finished (to be published in *The Military Surgeon)* a description of the routine operation for the two types of inguinal hernia, with illustrations.

Today I had the opportunity to examine and to operate upon a man aged thirty-two, with double inguinal hernia, which belongs to the type in which the conjoined tendon is completely obliterated, the type most difficult to cure, and as the anatomical picture is so fresh in my mind, it would seem not out of place to publish briefly a description of the examination and the anatomical findings.

In the publication in the *Journal of the American Medical Association* I wrote:

> "This type of inguinal hernia, however, can be recognized when the patient is examined lying flat on his back. If the finger is pressed against the scrotum and pushed up into the external ring, as the index finger passes through the external ring (the hernia having been reduced), it meets no obstruction, but enters at once into the peritoneal cavity; and in some cases the opening is so large that when the index finger is flexed it can palpate the pubic bone in the region of the symphysis."

Today, when I examined this patient, I found that my description was correct. It was more than one year since I had encountered a similar case, and I was naturally pleased to be able to confirm what I had written. Apparently many surgeons are not familiar with this group. My colleagues and the interns at the Hospital, who had carefully examined the patient, had not observed this unusual condition, because it is unusual. In the ordinary case of inguinal hernia the index finger, as it passes into the external ring, is deflected upward and outward following the course of the inguinal canal, and if one requests the patient to raise his head the index finger easily recognizes the edge of the rectus and the lower border of the internal oblique muscle, and it palpates the solid wall (conjoined tendon) of the posterior inguinal canal bounded below by the pubic bone, above and medial by the internal oblique and rectus, and below by Poupart's ligament. In this, the larger, group of cases the opening is above and to the outer side of this anatomical structure.

In the case examined today the hernia appeared when the patient stood or coughed as bulgings in the region of the external ring. These bulgings disappeared in the recumbent position. The index fingers easily passed through each external ring directly into the peritoneal cavity and could palpate the pubic bone. The tips of the fingers met when both were introduced at the same time.

ANATOMICAL PICTURE

After dividing the skin and subcutaneous tissue and exposing the aponeurosis of the external oblique one could easily introduce the index finger into the external ring and demonstrate as we did before operation, the absence of the conjoined tendon. The aponeurosis of the external oblique was very relaxed. When this structure was divided one could recognize a distinct bulging above the pubic bone in the space between the edge of the rectus, the internal oblique muscle and Poupart's ligament. The cord with its covering passed over this bulging. It was therefore a direct hernia. There was no distinct sack and the tissues forming this bulging were not divided. The problem was to make a new abdominal wall down to the pubic bone, leaving a small opening for the cord.

I found that it was impossible to approximate the structures as they were. The rectus in its sheath was immovable; the attenuated internal oblique muscle, although mobile, could not be brought down to the pubic bone. I spent some moments in attempting to approximate, but found it impossible. I did this, because in recent personal communications some of my colleagues have written that they have had no difficulty in applying the ordinary Bassini operation with Andrews' method of imbrication to this type of hernia, while others have agreed with my position that the ordinary methods do not allow a firm suture. In this case there was no question as to the absolute impossibility of closing this rent in the abdominal wall by any suture of the structures without some plastic procedure. It is quite possible that in herniæ of this type of longer duration and larger size the tension of the peritoneal protrusion may stretch the surrounding abdominal muscles and fat, and thus allow suture. I think I can recollect instances of this kind.

The rectus sheath was then thoroughly isolated by separating the aponeurosis of the external oblique. Following Halsted's scheme a triangular flap was outlined with the undivided base along the edge of the rectus. But in this case the sheath was so attenuated that it made a very inadequate flap. The rectus muscle was mobilized by blunt dissection and division of some of its fibres.

I then found I could suture the rectus muscle and this piece of fascial flap to Poupart's ligament very snugly over the cord which was pressed against the pubic bone.

The second suture included the rectus muscle and its sheath and the more mobile internal oblique to Poupart's ligament. These two sutures covered the defect due to the absence of any structure which could be called the conjoined tendon. The internal oblique above was sutured to Poupart's, perhaps an unnecessary extra suture. These mattress sutures were of chromic catgut. Now, the edge of Poupart's was overlapped and sutured to the rectus and internal oblique muscles. Then the free aponeurosis of the external oblique was fixed over these two rows of sutures by two rows of fine black silk. The weak point of the operation, of course, is due to the fact that on the lower and outer side there is only fascia—Poupart's ligament. Because of this, great care must be exercised in passing the sutures not to split this structure. Theoretically, it would be best to employ throughout a French needle and fine silk. But in this case the tension was too great for fine silk and No. 0 chromic catgut had to be employed.

In my publication in 1899 I found that 50 % of cases recurred when the ordinary operation was performed. It is important to note here that at that time in the Halsted Clinic the cord was transplanted. For this reason the recurrence in the lower angle of the wound could not be attributed to the presence of the cord. Since then in Dr. Halsted's and in my own clinics the rectus and its sheath have been transplanted in this small group of inguinal hernia. Unfortunately I have not had the opportunity to study the ultimate results with the same exactness but I know there have been recurrences. In my two recent publications I ventured the statement that the probabilities of recurrence even after the most painstaking plastic operation would be from 10 to 15 %. In a recent letter from a colleague who uses this method he admits 10 % of recurrences.

Not more than eighteen months ago I

operated upon a patient with similar findings and by the identical method. I remarked at the end of this operation: "This has been a most satisfactory suture." However, both herniæ recurred within two months when the patient strained in lifting a heavy trunk.

THE IMPORTANCE OF THIS TYPE OF HERNIA IN MILITARY SURGERY

The object of subjecting a soldier to operation is to render him fit for full military service. In about 95 % of inguinal herniæ the chances of a permanent cure in civil practice are over 98 % in the type of hernia in which the conjoined tendon is wide and firm. Soldiers with this type of inguinal hernia should, therefore, be made fit for full military service.

However, in the small group — about 5 %—the chances of a permanent cure in civil practice are not more than 85 or 90 %. As soldiers in full military training are subjected to more strain, the probability of a cure should be less.

As this type of hernia can be recognized before operation, soldiers with this form of hernia should not be subjected to operation. They should either be discharged from the Army or placed in limited military service.

OPERATION FOR HERNIA UNDER LOCAL ANESTHESIA

Surgeons familiar with local anesthesia experience no difficulty whatever in completing the operation for inguinal hernia without a general anesthetic. The operation requires a little more time.

In our training camps today general anesthesia has an added danger. Pneumonia, bronchitis and streptococcus infection are prevalent in the hospitals. In a recent visit to one training camp two officers admitted with inguinal hernia for operation showed a pure culture of streptococcus in the routine throat cultures. With this prevalent irritation of the mucous membrane of the respiratory tract and the widespread distribution of pneumo- and strepto-cocci, there would seem to be an added danger from general anesthesia, whether gas or ether, and it would undoubtedly be safer to perform all operations under local anesthesia if this is possible.

Some of the chiefs of the surgical divisions in our training camps are rather adverse to any operation such as hernia and laparotomy if it can be deferred, on account of the huge number of contagious patients in the base hospitals. There is no doubt that it is an environment that we seldom have to consider in civil practice. I am rather of the opinion, however, based upon my study of streptococcus infection and erysipelas in the Johns Hopkins Hospital before and after the introduction of rubber gloves, that the only danger of infecting a clean operative wound is actual contact, and if the surgeons and their staffs wear gloves and gowns in their treatment of infected cases as well as during clean operations, the danger will be eliminated.

Nevertheless, the operating surgeons of all our base hospitals should proceed with great caution. So far as I know, no infections out of the ordinary as observed in civil practice have taken place in the camps.

It is of the utmost importance that our base hospitals should be supplied with novocaine for local anesthesia. This drug is now manufactured in this country, and in my experience is just as effectual as that of German origin.

SCAR PAIN AFTER OPERATION FOR INGUINAL HERNIA

Members of the medical corps of our own Army, from their past experience, and Canadian surgeons, from their recent experience in this war, claim that a large number of soldiers operated upon for hernia are constantly complaining of scar pain and are using this complaint to be excused from full military duty. This observation is at variance with my own experience in civil practice. I have been observing my patients constantly for over twenty-five years, and I know of not a single individual incapacitated from any civil occupation by scar pain. It is quite true that a certain type of individuals complains of scar pain irrespective of the position, extent or character of the scar. On the whole, my observations seem to prove that those who complain most and most persistently of scar pain lead indolent lives or pursue occupations in which the part the seat of the scar is not sub-

jected to constant use. For this reason I am not willing to admit that soldiers operated upon for hernia if properly handled after operation, should not be so capable of full military service as any other soldier of the same mental and physical type who has not a hernial scar.

This, however, is a question that should receive careful consideration.

I have a large number of men who have been drafted into the Army upon whom I have operated for inguinal hernia. So far none has been discharged to my knowledge. When drafted a number communicated with me hoping that because they have been operated upon for hernia they could be exempted. My answer was: "You should make a better soldier, and if you have scar pain, pay no attention to it."

I would appreciate expressions of opinion by military surgeons on the recognition before operation of the type of inguinal hernia in which the conjoined tendon is obliterated, on the importance of local anesthesia, on whether any increase of infections in clean wounds has been experienced, and from division and regimental surgeons, whether scar pain after operation for inguinal hernia has been the cause of much complaint by soldiers in training.

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THE ROLE OF SYPHILIS IN SURGERY*

BY GEORGE GELLHORN, M.D., F.A.C.S.,
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It will require but a fraction of the time allotted to me to lay before you for discussion a topic which is not likely to disappear from the programs of medical societies for years to come. Setting all preliminaries aside, it is only necessary to point out that the large number of syphilitics in the world renders it extremely probable that among our surgical patients we shall meet with so high a percentage of syphilis that we can not ignore it as negligible.

The question, then, forces itself upon us, whether a syphilitic who has to undergo an operation has as fair a chance for recovery as a non-syphilitic. In propounding this question, two ways by which surgical patients may come to harm on account of their syphilis immediately suggest themselves to us.

The first is the possibility that such patients, through errors in diagnosis, are subjected to unnecessary, and even dangerous, operations. That mistakes of this kind occur is, after all, not surprising. A disease like syphilis, which appears in a thousandfold deceitful disguises, might well produce manifestations which resemble conditions calling for operative intervention; and, indeed, there is hardly a surgical affection of any part of the body that at one time or another has not been mimicried by syphilis. As a result, superfluous operations a plenty have been performed. Proofs of this statement are scattered through text books and periodicals, but they have never yet been collected systematically, and even now an enumeration of them would be tedious. Moreover, every surgeon of any experience is able to add to their number from his personal practice.

Merely as an illustration, and because "confession is good for the soul," I shall cite one of my own slips in diagnosis.

It was years ago, in the pre-Wassermann days, when I operated upon a woman for what I thought to be an infected hydronephrosis on the right side. For some reason which I no longer recall, probably because the diagnosis was very uncertain, I opened the abdomen through the right rectus, and found instead of a renal mass a large, hard and nodular tumor in the lower part of the liver surrounded by a number of satellite nodes of white color and hard consistency. At this juncture, a friend of mine, and a man of national reputation, who had just finished an operation in the adjoining room, was called in for consultation. He concurred with me in the view that the tumor was a carcinoma of the liver and advised closure of the abdomen. When the patient, despite her marked cachexia, did not die, and even showed signs of slight improvement after a week or two, it dawned upon me that I had to deal with a gumma. I instituted antiluetic treatment and had the satisfaction of seeing my patient recover within a short time. Ten years later I happened to see her again and still found her in good health.

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*Read in Section on Surgery, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

*(From the Gynecological Service of Washington University at the City Hospital.)

It is natural and human to make a mistake; but, as the late Maurice Richardson, of Boston, once remarked, it is unjustifiable to repeat the same mistake. Applied to syphilis, it may confidently be expected that such diagnostic errors will steadily decrease with the course of time. A veritable flood of articles on syphilis holds the attention of the medical profession focalized upon this disease; and to have it before one's mental vision means half the diagnosis.

Furthermore, the employment of the Wassermann reaction is constantly growing more widespread, and the time may not be far distant when this test will be made use of as universally as the examination of urine or the determination of blood pressure. It is not so very long ago, though it seems ages past, when surgeons would operate upon patients whose urines had not been tested; and the analogy carries with it a note of hopefulness. I am fully conversant with the limitations, difficulties and discrepancies of the Wassermann reaction, but I am persuaded that the near future will bring about a standardization of technic and uniformly reliable results.

Thus while the syphilitic patient of today may still be in some danger of having to submit to an unnecessary operation, the syphilitic patient of tomorrow may happily escape this risk.

The second part of our inquiry has to consider patients with unrecognized or untreated syphilis who are subjected to operation on very good surgical indications. The number of such patients is probably very large. Do they run any undue risk in surgery? Is their syphilis likely to lessen their chances of ultimate recovery or to interfere with the normal course of convalescence?

Theoretically, an affirmative answer to these questions seems self-evident. We know that syphilitic infection causes a generalized spirillosis almost instantaneously. Senger[1] tells of the deliberate inoculation of a medical student. Nine hours afterward the lesion was carefully removed by wide dissection. Nevertheless, the patient showed typical syphilis later, proving that the increase of spirochetes is tremendous and their spread through blood and lymph marvelously rapid.

We know, furthermore, through the researches of Warthin,[2] Barach,[3] et al., that in syphilis the blood channels and the heart suffer the greatest involvement and that the heart is probably the most frequently affected organ of the body. We learn from Hoppe-Seyler[4] that luetic lesions of the aorta and other vessels seldom retrogress completely under specific treatment, and we are warned not to subject such patients to physical strain. Of other vital organs the kidneys may become acutely[5] or chronically[4] inflamed in syphilis. In fact, all organs and tissues of the body may be more or less affected by lues, and the syphilitic cachexia which we find so frequently, and more particularly in women, is by no means confined to the later stages of the disease, but is often encountered, for reasons as yet unknown, in young women who have latent syphilis.

The life insurance companies have long realized that syphilis lowers the vitality of individuals. "No man," says one of their experts,[6] "who has ever had syphilis can be rated as a first-class life. The mere fact of his having had syphilis at once places him in a second-class division."

Clinical evidence in the field of surgery amply confirms this attitude. In 41 surgical cases with positive Wassermanns, Senger[1] observed non-union of fractures, gall-bladder infection associated with cirrhosis of the liver, intestinal strictures suggesting cancer, etc. The same author mentions his experience in an operation for uterine fibroid. No one suspected the patient of syphilis until a gumma developed along the line of incision. "Had the Wassermann been taken before instead of after the operation, how much suffering she would have been spared!"

My own observations have been very similar. I have seen extensive suppurations of the abdominal incision resist all possible treatments for weeks, but turn into clean and vigorously granulating wounds as if by magic when anti-luetic treatment was instituted. I recall four cases in which the entire abdominal incision broke open about a week after operation. The tissues of the abdominal wall showed no tendency whatever to unite, but there was no suppuration present. All four patients were profoundly cachectic. Two were probably not luetic,

but one was a frank syphilitic and the fourth, despite a negative Wassermann, was probably diseased. It would be interesting and important to know how high the percentage of syphilis is in such cases of complete disinclination of the tissues to knit. I have at present under my care a woman with tertiary syphilis in whom several surgeons have unsuccessfully attempted to repair a third degree laceration of the perineum. I subjected this patient to energetic anti-syphilitic treatment with the view of softening the cicatricial tissues about the vulva and of forestalling disturbances of wound healing. In the course of this treatment which included several injections of Salvarsan, a laparotomy for pus tubes became necessary; and the patient went through this operation without the slightest complication.

In former years syphilis has been held a contraindication in spinal anesthesia.[7] I have employed this mode of anesthesia on scores of syphilitics without any unfavorable after-effect and, therefore, felt inclined to eliminate syphilis as a contraindication. But in the last two years I have seen two cases of cerebro-spinal meningitis develop after spinal anesthesia. In both instances, post-mortem revealed the presence of tuberculosis. As syphilis and tuberculosis are so often associated, the question will have to be determined how often spinal anesthesia in syphilitics stirs up an old tuberculosis. Syphilis alone would probably not lead to death in these cases. At any rate, Linzenmeier,[8] who observed meningitis in a syphilitic woman after spinal anesthesia, brought about a complete cure with Salvarsan.

The tubercle bacillus is, however, not the only germ which is aided and abetted by syphilis. It is certain that the weakened organism of the syphilitic patient is very often unable to put up a strong fight against any kind of bacterial invasion. This fact is of far-reaching importance in surgery when we realize that none of our operations is, strictly speaking, completely aseptic. Even in the "cleanest" operation a few microbes gain access to the wound, but the defensive apparatus of the body are strong enough to deal effectively with the foe. In the syphilitic patient such means of defense are often inefficient. Hence suppurations and other disturbances of wound healing in the luetic. As a test object, Drs. V. F. Townsend and H. G. Moerschel, of the House Staff at the City Hospital, have investigated for me the results of vaccination in 80 cases. Of these 80 patients there were 31 with positive Wassermann and 49 with negative Wassermann. Of the 31 positive cases, only 9, or 29 %, showed normal reaction, while 22, or 71 %, had a mixed infection of the vaccination. Of the 49 negative cases (among which there may have been several syphilitics), fully 34, or 69.4 %, showed an undisturbed course and only 15, or 30 %, became infected.

Syphilis as an etiologic factor in surgical mortality does not ordinarily receive the consideration it deserves. Yet I am convinced that in a recent case of death from surgical shock in a Wassermann-fast woman, it was the patient's syphilis which, in the last analysis, caused the fatal issue. The case related by Carstens[10] is instructive. A patient with a large fibroid received anti-syphilitic treatment preparatory to operation. A few days before the latter was to be performed she died quite suddenly from cerebral hemorrhage, as the autopsy revealed.

Up to this point, theory and practice seem to prove that a syphilitic who submits to operation subjects himself to serious risk to life and limb. But is it permissible to make this broad statement in regard to all cases of this kind? Has not every one of us seen syphilitics go through operations without any disturbance? Have we not time and again been surprised to find that certain patients who had made a particularly smooth recovery had syphilis at the time of operation? These undeniable facts, exceptions though they may be, complicate the problem considerably. It appears, then, extremely desirable to know exactly in what proportion of the cases we must expect trouble. Strange to say, there are no statistics extant in any language to guide our actions. Most of the text books ignore the subject or at best deal with it in general terms. "Syphilis, either hereditary or acquired, is capable of greatly interfering with good post-operative results. If, however, we take the precaution to give these patients proper anti-syphilitic treatment for some time be-

fore and after operation, the results will be perfectly satisfactory. Operations, except those of emergency, are not to be undertaken in the first or second stage of syphilis."[9] In view of the need of more precise knowledge, I have attempted to supply the lacking statistical information; but after looking through many hundreds of records in several of our public hospitals, I gave up the work as useless labor. Too many elements of error would creep in and vitiate any conclusions. Wassermanns had not been taken in a sufficiently large number. Where such tests had been made, the causes of mortality and morbidity were not clearly stated in every case.

Yet, the intrinsic value of reliable statistics for our question can not possibly be denied. Without it, we have only personal impressions to guide us, and every one knows how misleading impressions may be. On the other hand, we stand on firm scientific ground if we are armed with accurate figures from which to draw logical conclusions. Such statistics can be prepared. I have already made a beginning, but it will take a year before I can produce them. In the meantime, every surgeon can help in this important work by thoroughly analyzing his operative cases in regard to positive or negative Wassermanns, the possible influence of syphilis upon the causes of death or postoperative complications, the effect of specific treatment before or after operation, etc. It would not be necessary to supply imposingly large figures. A series of thirty or more appendectomies, hernia operations, hysterectomies, etc., on Wassermann-positive patients contrasted with an equally large series of the same kind of operation on Wassermann-negative individuals would yield valuable information, and if, after a year's time, this Association would collect all available statistics of this sort and have them edited by a special committee, a great constructive work would be done which would go far to clear the problem and thereby do away with much suffering and failure.

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Metropolitan Bldg.

LARGE MULTIPLE INTRAVESICAL ADENOMA OF THE PROSTATE

By G. Frank Lydston, M.D.,
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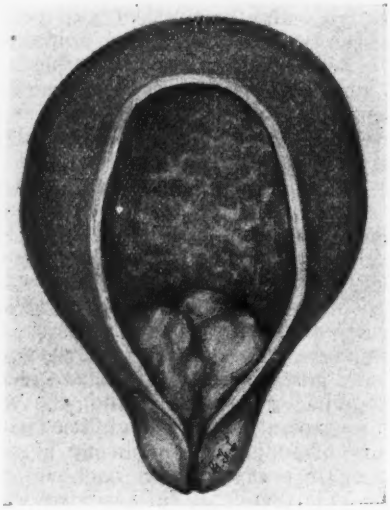
Chicago, Ill.

The patient, 65 years of age, was a lawyer by profession. He had a history of frequent micturition with several attacks of retention during the past four years. He had led a catheter life for six months past. For about three months catheterism had been increasingly difficult and productive of hemorrhage. For about one month there had been daily hemorrhages from catheterism with considerable blood in the urine voided voluntarily. The residium was nearly seven ounces. There had been no pain save that



incidental to passing the catheter. The patient was very fat and appeared well nourished until the hematuria developed, but had become markedly anemic.

There was no evidence of renal involvement and, aside from the blood content, the urine was normal, there apparently being no infection. Cystoscopy proved impracticable on account of the bleeding and the fact that the bladder could

not be properly distended for the procedure because of, (a) intolerance, and (b) the fact that the bladder seemed to be well filled with a tumor mass. This could not be felt supra-pubically because of the patient's obesity. A very large prostate could be felt per rectum, extending much higher than is usual. Radical operation was refused and hence vasectomy was performed and the patient returned home.

The vasectomy was done with the hope that the hemorrhage might thereby be controlled to a certain degree. Malignancy of course was suspected. Whether or not the vasectomy was effective, the fact remains that the hemorrhage soon was markedly diminished, with resulting great improvement in the general condition.

Six weeks later the patient returned, converted to radical measures. The combined supra-pubic and perineal operation was performed, and although the combined method greatly facilitates the removal of the prostate supra-pubically, the operation proved to be very difficult on account of the form and location of the tumors and the superabundance of fat in the abdominal wall. The illustration herewith appended shows the condition found. There were three large, flattened, pear-shaped tumors projecting intravesically from the base of the prostate, one from each lateral lobe and another corresponding to the "median lobe." These tumors closed the vesical outlet so completely that it was surprising that any urine could be expelled without catheterism. There was considerable erosion of the inner surfaces of the tumors, evidently from catheter trauma.

Recovery was uneventful. The microscope showed an apparently simple adenoma with moderate fibrosis. Obviously, malignancy might have shown itself later had not the patient suddenly died from what was said to be "heart disease" three years after the operation.

25 *E. Washington St.*

SPONDYLITIS CHRONICA ANKYLOPOIETICA

By William Allan, M.D.,
and
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Charlotte, N. C.

In reporting at this time two cases of spondylitis, rather briefly and incompletely, we wish to point out the advantages to be derived from a careful clinical examination of the motility of the spine followed by Roentgen plates of the entire vertebral column, in reaching a diagnosis in young adults who complain of persistent aching or stiffness of the back radiating into the sides or abdomen.

Case I.—White, male, age 30, married, farmer, was seen February 14, 1916, with Dr. Gibbon at the Presbyterian Hospital. Family and past history negative except that he had three molar teeth pulled after they had decayed. Habits and sex history also negative. The present trouble had started ten years before, while the patient was hauling logs, as pain on motion, in the lower back. He took medicine, used plasters, and kept at work. After four years this pain on motion began to move rapidly up his back until within a period of six months his back was painful up to his head. There was pain whenever he bent forward, so that he had to squat down to hitch up his traces. He continued to work until June, 1915, when, after walking fourteen miles one day, he found his back so painful that he took to crutches. He used crutches until November 25, 1915, when he had a fall. As his wife is unable to lift him, he has remained mostly in bed since that time. This stiffness has been increasing gradually for the past six years, until at present he has the typical, rigid "poker spine."

His back has been fixed for only a year, but he says his neck has been as stiff as a board for the past five years. Although he could not stoop over, he ploughed until last summer. The right knee has been growing stiff for a year, but without pain. Has had no fever and no chills with this trouble, and no other symptoms except slight swelling of the ankles for a year or so.

On examination the man was seen to be very much emaciated, with neck and body bent forward and somewhat to the left, with the entire backbone as stiff as a poker, so that he could not even turn over in bed. The skin was covered all over with a fine staphylococcus acne, with eczema on both sides of nose. Muscular atrophy resulting from loss of motion of parts of the body was very evident. Eyes showed pupils equal, reacting to light and to accommodation, with consensual reflex normal. Distinct horizontal nystagmus on looking to either side, and the eyes do not always focus together as though the internal muscles of the left eye were weaker than the external. When either eye is fixed the other turns outward. (No tremor nor scanning speech.) Ears and nose normal. Teeth good except last upper molar, the right side of which has a decayed spot. Tongue coated; tonsils atrophied. No glands anywhere. Spinal column is rigid throughout, not permitting any motion at all, with marked kyphosis in upper thoracic and cervical regions. Head fixed on atlas. The articulations of all the ribs with the vertebrae are ankylosed, so that on deep inspiration nothing expands but the abdomen. The immobility of the ribs with the kyphosis cause a caving in of the lower end of the sternum and the free costal margins. Breathing entirely diaphragmatic. Lungs clear. Cardiac dullness eight cm., sounds normal, pulses equal, regular, poor tension. Hands and feet cold, clammy, with slight cyanosis. Abdomen negative with hepatic and splenic dullness normal. Rectus abdominalis and right quadriceps extensor muscles a little spastic. Right knee somewhat stiff so that it can not be fully extended, with contraction of the hamstring muscles. Left knee slightly stiff. Unable to obtain knee jerks. No clonus, no Babinski. Superficial reflexes and sensation normal. Psyche entirely normal in spite of his condition. Temperature has been normal. Hemoglobin 57 %; differential count normal. Reds normal with apparently an increase in platelets. Urine negative. No pros-

tatic secretion could be obtained. The Roentgen plates of the lumbar spine show boney metamorphosis of the intervertebral cartilages and the vertebral ligaments and capsules with some absorption of the bodies of the vertebrae in this region. The cervical and thoracic vertebrae show ankylosis of the intervertebral (and costovertebral) articulations with ossification of the anterior ligament, but no ossification of the discs in these regions. Atlas unrecognizable, lipped over axis. The costo-vertebral articulations show true boney ankylosis, the joint cartilages and synovial membranes appearing as a dense white line between the head of each rib and the vertebrae. Roentgen plates of all the teeth uniformly negative for abscesses.

Case II.—White, male, age 33, married, mill operative, seen April 1, 1916, through the courtesy of Dr. Baxter Hunter. Family history and habits unimportant. At the age of 19 all the joints of his fingers, wrists, toes and ankles swelled tight and were painful on motion. Unfortunately he does not remember whether or not he had any fever, redness, chills or sweats with this attack. The joints of his extremities are now normal. His present trouble started some ten or twelve years ago as soreness and stiffness in the lower back. This would wake him up and he could not turn over in bed. His back would be very stiff when he first got up in the morning, mostly under the right costal margin behind. But after moving around some he would become fairly comfortable until night. The soreness and stiffness with pain running around the ribs on the right side increased steadily until last summer, when he had pain on motion over the whole right side from scalp to toes, and he was unable to raise himself in bed. About this time he was using chrysarobin ointment for a general psoriasis of ten years' duration, and his feet and legs swelled. Last fall his gall-bladder was drained, presumably because of pain, as he states he had no digestive symptoms, nor fever, nor jaundice. Had no pain when he remained perfectly quiet. Is better now, but this winter his back has become permanently stooped. Not able to work for a year.

Fig. I.—Spinal column fixed in this position.

Examination shows a man fairly well nourished, with good color, moving around freely. His walk is a little slow and careful, to avoid jarring. Eyes, ears, nose and throat normal. Heart and lungs normal. Abdomen shows a scar over the gall-bladder, otherwise normal. Teeth are dirty. Glands, reflexes, extremities normal. Psoriasis scattered generally over back and legs. Neck has no lateral motion, but can be rotated and flexed slightly. The spinal column shows practically no motion from the eighth vertebra down. Tenderness under the right costal margin behind. Urine and blood normal. The Roentgen plates show metamorphosis of the intervertebral cartilages and vertebral ligaments of the third, fourth, fifth, sixth and seventh cervical vertebra. The vertebra give the appearance of a fused mass rather than of separate units. The articular surfaces are ossified. The spinous processes show no abnormal changes. The twelfth dorsal and first lumbar vertebra show the same changes as the cervical. Also, the fifth lumbar and first sacral vertebrae show similar changes. The external occipital protuberance is larger than normal and shows considerable lipping at the tip. Roentgen films of the teeth show abscesses at the roots of three teeth. The costovertebral articulations are not involved.

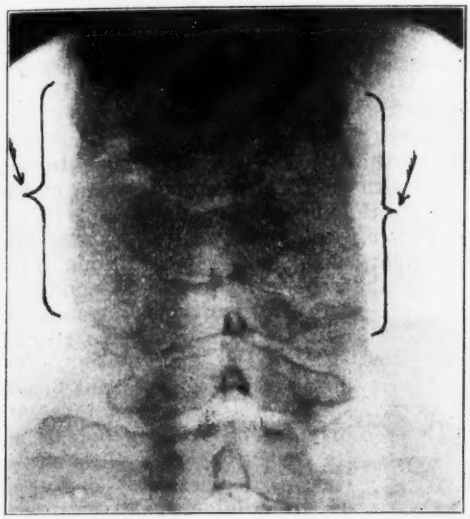

Fig. II.—Showing bony fusion of transverse processes of cervical vertebrae.

As functional backache is one of the commonest of complaints, organic backache (that due to structural changes in the tissues composing the spinal column) seems rare by comparison. While organic backache is difficult to diagnosticate in the early stages, spondylitis may offer insuperable difficulties at first because clinical symptoms may precede demonstrable bone and joint changes by a year or longer (Barker). However, when limitation of motion has appeared, a Roentgen examination becomes imperative to demonstrate the presence or absence of bone changes, and their character, if present.

A pretty instance of abdominal pain originating at the intervertebral foramina is afforded by our second patient, who was operated upon for gall-stones. These cases have demonstrated to us the necessity of making examination of the motility of the vertebral column a part of the routine examination in any patient presenting pain in the back or flanks.

The terms spondylitis and spyondylitis deformans as employed by some authors have been made to include all types of stiff back due to affections of the vertebral column. Other authors use these terms to designate only those cases of stiff back due to some specific infection, as typhoid spine. Still others reserve these terms for use only in those spinal arthropathies in which infection could not be made out.

Fig. IV.—Showing ankylosis of lumbar spine.

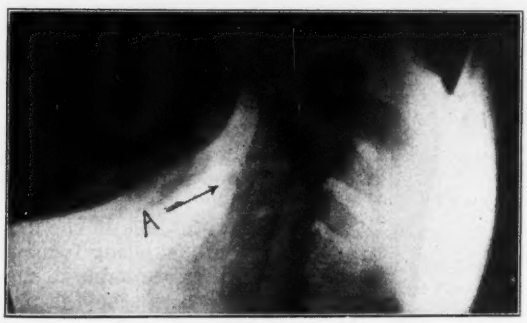

Fig. III.—Showing ossification of anterior ligament of cervical vertebrae.

The various types of spondylitis have been attributed to infection, (1) anomalies of the gland of internal secretion, (2) loss of the elasticity of the intervertebral disc, (3) autointoxication, and (4) various other causes.

In discussing spondylitis, Crispan[5] follows the classification given by Teissier (Liege Congress, 1905), namely, (a) tropho-nervous rheumatism, or true chronic rheumatism (including arthritis deformans); (b) chronic infections pseudo-rheumatism; and (c) rheumatic diathesis. Crispan considers spondylose rhizomelique of Marie a chronic infection (pseudo-rheumatic). Leri[6] recognizes rheumatic, infectious and traumatic spondylitis. Barker's[7] classification of spondylitis is easily the best and clearest we have seen.

Fig. V—Limit of flexion of vertebral column. Cervical and lumbar regions rigid.

After classifying chronic arthritis into the following five groups: (1) gouty arthropatics; (2) those of severe nervous diseases; (3) hypertrophic osteoarthropatics; (4) chronic arthritis secondary to infection; and (5) chronic primary progressive polyarthritis, he points out that all of these five types of arthropathy are met with in the bones and joints of the vertebral column.

Passing over the gouty, nervous and secondary infectious manifestations in the spine, the remaining cases of spondylitis fall into two types, a non-infectious hypertrophic osteoarthritis (group III, spondylitis deformans) and a chronic ankylosing spondylitis corresponding with primary progressive polyarthritis (group V, spondylitis chronica ankylopoietica). Barker is of the opinion that progressive polyarthritis is an independent disease of unitary etiology, probably infectious.

Hedenius[8] also differentiates between the ankylopoietic and the deformans types of spondylitis, attributing the former to infection or toxins.

Spondylitis occurring in young adults, as in our case, with extensive involvement of all the intervertebral and costovertebral joints, with ossification of the ligaments and capsules, without involvement of the disc and vertebral bodies for the most part, and without exostoses, constitutes the picture of primary progressive polyarthritis of the spine, or spondylitis chronica ankylopoietica.

Fortunately pain, which is often a very distressing symptom, was not prominent in our case.

As we were unable in the first case to find any existing focus of infection, we were unable to suggest any means to stop the progress of this grievous condition, being obliged to fall back on protective measures as offering the only hope of delaying its ad-

vance. In the second case the abscesses at the roots of the teeth were cleaned out in the hope that this procedure might stop the progress of the disease. The boney changes that had already taken place are of course irreparable.

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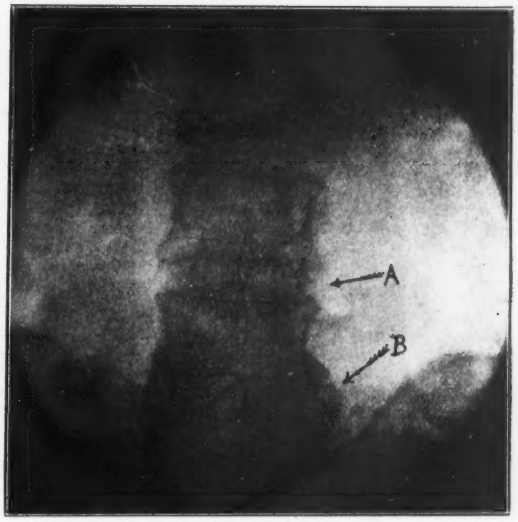


Fig. VI.—A, normal joint; B, ankylosed joint.

AUTHORS' ABSTRACTS

Surgery

Some Causes of Difficult Labor and Their Treatment. T. W. Wells, Oklahoma City, Okla. Journal of the Oklahoma State Medical Association, Vol. xi, No. 1, January, 1918, p. 19.

The author says that the cause of most of the mortality and morbidity of childbirth has been overcome by the intelligent application of asepsis and antisepsis. We rarely see a case of puerperal infection now except in the case of the criminal or the grossly ignorant.

He says that we should study the general make-up of the patient, have her walk, notice if she limps, etc. Full muscular women seldom have contracted pelves, and if they do the type is usually masculine. Short, petite women may have generally contracted pelves. A woman who limps or is hunch-back may have a distorted pelvis.

He gives the diagnosis and prognosis, and outlines the treatment in justo major, justo minor, flat non-rhachitic and rhachitic cases.

In conclusion, he says the pelvimeter should be used as a routine in the examination of the pregnant woman, and that an accurate pelvimeter is necessary in order to recognize the type of deformity.

The X-ray is a valuable asset in making the examination of the foetus and parturient. The high forceps are not indicated where the head will not engage from any cause. He recommends the smallest number possible of vaginal examinations, one or two depending upon external palpation for general information, and rectal for definite information.

Factors for Safety and Ultimate Results in Goiter Operations. Caryl Potter, St. Joseph, Mo. The Journal of Missouri State Medical Association, Vol. 14, No. 12, December, 1917, p. 506.

Good results and keeping within the safety zone in goiter operations depend upon: (1) the preliminary palliative treatment; (2) the development of the many-stage operation; (3) the application of local anesthesia and nitrous oxid-oxygen anesthesia, either singly or combined; (4) the preservation of the anatomy and blood supply of the parathyroid glands; (5) the careful manipulation of the recurrent laryngeal nerve and the tissues around it; (6) clean-cut dissections and complete hemostasis; (7) the accurate approximation of divided anatomical structures; and (8) prolonged post-operative diet and treatment.

The preliminary treatment applies particularly to the exophthalmic cases, although in simple goiter with toxic symptoms it is just as important. All exophthalmics are given preliminary treatment regardless of the pulse. There are no patients who respond better to suggestion, quietude and diet; that is, none who give better results from the practical application of anoci-association.

The many-stage goiter operation has lowered the mortality and improved the results to such an extent that a low mortality means dividing the operation into steps. Division of stages: (1) preliminary tonsillectomies in selected cases; (2) boiling water injections; (3) ligation of one, two or three vessels at one or consecutive sittings; (4) partial lobectomy; (5) complete unilateral lobectomy; (6) complete unilateral lobectomy ac-

companied by removal of the isthmus and partial lobectomy of the opposite side.

Particular stress should be laid upon combined methods of treatment and care; care in the suggestive psychology, care in pre-operative treatment, care in dividing the operation into stages with sufficient interval between steps, care in dissection around the more delicate neck structures, care in anesthesia and care in the operation and after-treatment. Rough radical treatment spells failure; gentleness, success.

The Non-Surgical Treatment of Pelvic Infections. E. E. Montgomery, Philadelphia, Pa. The Therapeutic Gazette, Vol. XLI, No. 8, August 15, 1917, p. 533.

Thirty years' experience in treatment of pelvic disease justifies a reconsideration of our plans of treatment. We have passed through the wave of surgical procedure to a recognition that early resort to surgery is both unwise and unnecessary. The study of infection indicates the following: First, infection generally is limited and the patient may recover both health and function. Second, the patient may be spared the peril and discomfort of a surgical procedure. Third, the patient will more readily submit to non-operative treatment. Fourth, where the organs are destroyed the patient is still amenable to surgical measures and at a time when the danger of spread of infection is lessened. Its disadvantages are: first, it is difficult to maintain the confidence of a patient in a course of watchful waiting when improvement is not apparent. Advocates of active treatment will be suggested to the family. Consequently, if necessary to retain the patient, the least injurious measures should be selected. Second, the convalescence is slower but the prolonged morbidity is compensated for by lessened mortality. Third, a small percentage of cases will have to be subjected to operation later for suppuration and it will be felt that the patient would have been saved time and suffering by its earlier employment, but careful observation and increased experience will reduce the number of these. Operation should not be considered in the absence of local manifestations and delay in these favors the death of the organisms whose life is self-limited.

The most effective measures are rest in bed, cold over the abdomen in the active stage and heat later to promote absorption of exudation and products of inflammation; the continuous instillation of salt solution per rectum at the rate of thirty drops to the minute; evacuation of the intestine by the use of salines; nutrition in such character and quantity as can best be assimilated by the patient. I would unhesitatingly condemn the usual resort to the curet after abortion or labor upon the advent of temperature. Such treatment breaks down the barriers to the spread of infection which Nature so carefully erects, and my experience in the wards of the Jefferson Hospital, where 296 cases of abortion have been treated up to October 9, 1915, show there is a less mortality in those who are not subjected to operative measures. The aim of treatment should be restoration of health in the higher degree,—that is restored function.

A Case of Gas Bacillus Infection with Recovery Without Loss of Limb. Horace Reed, Oklahoma City. The Southwest Journal of Medicine and Surgery, Vol. XXVI, No. 3, March, 1918.

The patient, a farmer, sustained a compound fracture of the left wrist. The author first saw him on the third day by which time the infection had reached the arm. On the fourth day the axilla was involved, and by the fifth day the infection was within 1½ inches of the sternum.

Below the elbow multiple incisions were made down through the muscle sheaths, whereas above the elbow and on the thoracic wall incisions extended only to the aponeurosis.

A final chain of incisions was made beyond the involved area on the anterior chest wall. The infection did not pass this chain. This fact may represent a coincidence. The procedure is worthy of further trial.

Dakin's solution was used in all incisions according to the technic of Carrel. At the end of one week the gas infection had disappeared; and most of the incisions being clean, were sutured. The others healed rapidly by granulation.

There is no doubting the efficacy of free multiple incisions. The enormous swelling rapidly subsides and the circulation is restored.

Dakin's solution was prepared by a competent chemist and the nurse, having had more than a year's service in France, understood how to use it. When not prepared and employed properly, the solution may be productive of harm.

When Shall Fractures Be Radiographed? Chas. D. Cleghorn, Macon, Ga. Charlotte Medical Journal, Vol. 77, No. 2, February, 1918, p. 55.

There is no longer any question as to whether or not fractures should be examined with the roentgen ray, but only the question as to when they should be examined, i. e., before or after reduction. While the ideal procedure is to regard each case on its individual merits, there are certain general rules which can be followed in the main: (1) fractures occurring in the aged, those in feeble health, or those who are liable to shock, and those fractures which are accompanied by much injury to the soft parts, should be radiographed before reduction; (2) cases of single and simple fractures occurring in the young and hardy are those which may most safely be reduced prior to the radiographic examination, especially when there is little injury to the soft parts; (3) among the regions always calling for a preliminary x-ray examination are the hip, shoulder, elbow and cervical spine; (4) the fractures most apt to be properly dealt with in default of a previous radiograph are Colles' and Potts' fractures, fractures of the shafts of the long bones, jaw, metatarsals, metacarpals, and phalanges. Fractures are serious and we must leave no way untried which might improve our knowledge of their proper diagnosis and treatment. Therefore, we must use the x-ray when indicated and thus leave one element the less to chance.

Pulp Stones and Their Relation to Tic Douloureux. F. W. Brownfield, D.D.S., Chicago, Ill. Journal of the Missouri State Medical Association, Vol. XV, No. 2, February, 1918.

Judging from the number of cases of tic douloureux which have been reported as "cause unknown" the author is led to believe that pulp stones, pyorrhea, proliferative peridontis, impacted teeth and partially dead nerves, have not received due consideration as causes or factors.

Neuralgic pains are a direct result of an injury to the nerve trunk or its periphery, and may be produced mechanically by pressure, by infectious lesions as in syphilis, or by excessive uses of drugs as alcohol or morphine.

Facial neuralgia from a dental origin has been recognized in a passive manner, it being the custom of the physician to refer the patient to a dentist who probably reports the teeth "without cavities and in good order," which may be true functionally but not pathologically. Should roentgenograms have beeen properly taken and interpreted, backed up by tests with the Faradic current and the clinical history, the cause easily might have been found and remedied.

Pulp stones are formed within the pulp sheath by accretions of calcoglobulin and are resultant of a perverted effort of the organ to protect itself against irritation. Only a small percentage become pathogenic and this, as is also the case of impacted teeth and proliferative peridontis, is brought about by direct pressure, while pyorrhea produces inflammation by chemic and thermic irritation.

Gasserian dissection, alcoholic injection, and nerve stretching are unquestionably serious operations and often fail. Consequently a more intelligent co-operation between the medical and dental professions is needed to avoid treating results instead of causes.

The Surgical Treatment of Pelvic Infections and When it Should Be Employed. E. E. Montgomery, Philadelphia, Pa. The Therapeutic Gazette, Vol. XLI, No. 9, September 15, 1917, p. 609.

A decade ago there would have been no question of the treatment of pelvic inflammation and surgery would be the resort—surgery that meant sacrifice. As infection was regarded as an incurable condition in as far as function was concerned, it seemed folly to delay operative interference, and the removal of the infected structures was regarded as the valid course. It was not always practicable to secure the consent of the patient and her friends to a radical procedure, and some of these patients were not only restored to a good physical condition, but also gave birth to children subsequently, which showed the condition was curable. The recognition of a collection of fluid within the pelvis should be considered as justification for its evacuation through the vagina whenever it is thus accessible. The incision should be a free one and the cavity drained with a split rubber tube reinforced by gauze packing. Naturally the method of attack must depend upon the extent of involvement, the stage of the disease, and the particular structures affected. Consequently a careful investigation and correct diagnosis are essential. It should not be overlooked that the puerperal woman can be the victim of an attack of appendicitis. A large collection in the tubes which renders their retention prejudicial to health and even life must be considered a justification for operation, but wherever possible the ovaries should be preserved. Where the appendages are so involved as to make this impracticable it becomes a question whether it is not better to remove the uterus in whole or in part. The ovaries are the important structures to save, as they supply the secretion which, in combination with that of other ductless glands, governs colordination of vasomotor functions. The spirit that should govern the surgeon in these cases, then, is to preserve whenever possible all the pelvic organs. Even in pronounced infection one tube may be milked out by squeezing it when wrapped in gauze and evacuate it, promoting the destruction of any remaining organisms through the increased activity of the circulation. While an ovary alone can not insure procreation with both tubes and uterus removed, it is still worthy of preservation because of its influence upon the internal secretions and the vasomotor functions.

The Relation of the Parathyroid System to the Female Genital Apparatus. Eugene H. Pool, New York, N. Y. Surgery, Gynecology and Obstetrics, Vol. XXV, No. 3, September, 1917, p. 260.

Tetany following thyroid operations is usually due to removal of the parathyroids. Intermittent tonic spasms of the voluntary muscles frequently occur. These contractions usually begin in the hand, and later the feet are involved. The most characteristic contracture is the accoucheur's hand. The feet take the position of pes equinus or equino varus. Attacks begin two or three days after operation and last from a few minutes to hours. Weeks may intervene between attacks.

Experimental studies have not established any definite interaction or relation between the parathyroids and the gonads; yet apparently there is a connection between the parathyroids and the sex processes in the female. Different phases of the female sex cycle,—pregnancy, lactation and menstruation,—exert a marked influence upon the tetanic spasm. Partially parathyroidectomized animals not only developed tetany after operation, but after recovery were again attacked in a subsequent pregnancy, showing increased parathyroid need during pregnancy. During menstruation the entire endocrin system is probably in a state of heightened activity. Inability on the part of the parathyroids to meet this increased demand may lead to evidence of insufficiency with occasional culmination in the clinical picture of tetany. The function of the parathyroids is apparently closely connected with calcium. There is reason to believe that maternal tetany and lactation tetany are associated with calcium deficiency. Latent tetany, or a subtetanic condition, is much more common in pregnant and puerperal woman than is usually assumed. Tetany in new-born infants, the offspring of tetanic mothers, is usually fatal within a short time after birth. In the treatment of maternal tetany, the administration of calcium in large doses is followed by beneficial results in the great majority of cases.

EYE, EAR, NOSE AND THROAT

A NEW TONSIL GUILLOTINE*

By Greenfield Sluder, M.D.,
Clinical Professor and Director of the Nose and Throat Department, Washington University Medical School,
St. Louis, Mo.

In 1910, I presented to the American Medical Association "A Method of Tonsillectomy by Means of a Guillotine and the Alveolar Eminence of the Mandible."

The guillotine employed for that purpose was the original model of Physic, merely strengthened in its shaft.

Since that time Dr. Stanton Friedberg,[1] of Chicago, in a beautiful historical sketch, has shown us that a guillotine for the removal of tonsils, consisting of a shaft fenestra and a blade to push across, is an ancient device dating from the sixteenth century.

They all have in common the fenestra and the blade to cross it. Such was the model of Physic, and such is the instrument that I have preferred.

I present to you today a lever attachment for the purpose of adding power to push the blade across the last remnant of tonsil tissue as it is caught in the fenestra.

The guillotine, in 1910, was shown to be an instrument adaptable for tonsillectomy as well as for the original tonsillotomy. Since then a considerable number of so-styled improvements added to the guillotine have been made public. Many of these instruments have advantages of one kind or another. None, however, has the advantage of remaining perfectly still within the grasp of the surgeon's fingers while the lever or power device is put into effect.

Three or four years ago, in order to maintain the original model of the guillotine and still add a power lever, I published a "Mechanic's Dog" to be attached. That also has the disadvantage of necessitating the loosening of the surgeon's fingers, to a greater or lesser extent, in the process of adjustment.

The lever that I present to you today has the advantages that are lacked by all of the other devices, to-wit:

The original model of the guillotine is maintained, and at the same time the lever for power may be thrown into service without in any way dislocating the surgeon's grip upon the instrument. That permits some of the capsule to slip and be button-holed.

The accompanying illustration is practically self-explanatory. It shows the guillotine with the lever thrown up under the surgeon's thumb for the final bite.

When the lever is not in use it lies flat upon the shaft of the instrument, and the movement of the blade is left unimpeded in its passage across the fenestra. The lever bites only when the blade has been shut ready for cutting the last shred. A dull blade is employed and no power device has so far suceeded in driving the dull blade through the last shred of the tissue.

*Presented to the Section on Eye, Ear, Nose and Throat, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

[1]Annals of Otology, Rhinology and Laryngology, 1913.

This one does not accomplish that, either. It does, however, drive the blade through the main mass of tissue and leaves only a few shreds to be stripped off with the surgeon's finger.

The lever is held in place by a screw joint which should be adjusted tightly. When this joint is tight the lever may be raised up into position for the necessary biting and will remain fixed in that position while the surgeon performs the stripping of the last shreds.

It will be found a great convenience to have the lever remain in biting position without the attention of the surgeon's being kept specially on it. The surgeon should be enough of a mechanic to tighten this screw should the joint work loose.

Someone will probably "improve" the lever by adding a ratchet to hold it in biting position. This has seemed to me unnecessary and disadvantageous.

I explained in detail the advantages of the original model (simple) guillotine in the *Journal of the American Medical Association*, December 30, 1916.

SOME RARE COMPLICATIONS OF ACUTE MASTODONITIS WITH UNUSUAL SYMPTOMS*

By W. T. Patton, M.D.,
New Orleans, La.

The writer does not in this paper wish to give the impression that he considers cerebral complications rare in mastoid involvement. In fact, they are rather common. However, it has been impossible to find any record of a case developing so suddenly and with such severe onset as the one to be reported. In looking over records in the Charity Hospital of Louisiana I was able to find in the past seven years records of seven cerebral abscesses from various causes. All the patients died either before or after operation. Two other cases I saw in other hospitals of the city both died. Dr. J. W. Murphy, of Cincinnati, reported five cases seen by himself in one year, all following suppurating ears. In all of these cases the abscess was found either at operation or post-mortem. This is certainly a large number of cases for one man to see in such a short time when we consider that the records in the large Charity Hospital of New Orleans show only seven cases recognized in the past seven years.

The portion of the brain most likely to be involved from middle ear infection depends often upon the manner in which the infection gains entrance. When it occurs by direct continuity, the temporosphenoidal lobe is most often the seat of abscess. When the extension is through the labyrinth, the abscess is most often on the anterior aspect of the cerebellum. Since abscess of the brain of otic origin is a secondary and not a primary disease, the problem of diagnosis is often masked by the primary disease, or some of its complications. Quite a large extradural abscess may be present with little or no symptoms. A cerebral abscess of otic origin being an acute infection, the time is generally too short for the pathognomonic eye symptoms to develop, as in the case of tumors of the brain. Hence, the absence of optic neuritis does not exclude cerebral abscess.

It will hardly be necessary to mention here the symptoms of brain abscess as the normal or subnormal temperature, slow pulse, slow respiration, slow cerebration and want of sustained attention, mental obscuration, and tendency to doze, are too well known to all. Often, however, we may have an abscess with very few of the above symptoms, and these are the cases that give us most trouble.

When the abscess is in the cerebellum, the respirations are much slower than when in the temporo-sphenoidal lobe, are more apt to be irregular and of the Cheyne-Stokes character.

As to the treatment, once a diagnosis is made, the only treatment is incision, and the sooner the better. As to the method of incision, there is some difference of opinion. Some men use a long cataract knife, claiming that because of its thinness there is a minimum amount of trauma and because of its sharpness it readily pierces a tough capsule. Others use a blunt grooved director. Should there be a sinus showing pus, the encephaloscope is very useful. Once the abscess cavity

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

is reached, it can be more freely opened by means of a fine artery forceps. Then some form of drainage tube or silk worm gut is put in. One should be very careful in irrigating the abscess cavity. The author prefers not to irrigate.

The case I am about to report seems unusual both in method of onset and recovery. I hope some one with more experience will clear up several points which are still obscure.

CASE REPORTS

Case I.—Albert Leonard, white, married, age 28, was admitted to the surgical service of the Charity Hospital. New Orleans, September 2, 1915, with the following history:

Family History: negative.

Past History: smokes moderately; does not drink; never was sick before, with exception of "chills and fever;" denies all venereal history. Married eight years and has three healthy children. Occupation, farmer.

Present Illness: on the morning of September 1, about 7 o'clock, while driving the cows, he was suddenly attacked with violent pain in his right ear. This continued all day. Patient used a hot water bottle to his ear and hot sweet oil in the ear, with no relief. The same night about 7 o'clock the ear began to discharge and the pain became much less severe. The patient was quite restless and drowsy. About 10 P. M., his wife states that his left hand and arm began to "jump;" then the leg on the same side became similarly involved, and before morning there was paralysis of the entire left side. Pain still continued over the right side of the head. The patient was brought to New Orleans September 2 and admitted to the surgical ward of the Charity Hospital. I was first called to see the case on September 3, about 4 P. M.

On examination I found the patient very drowsy, answering questions very poorly and slowly. The right ear canal was full of sero-sanguinous fluid. Tympanic membrane bulging; posterior canal wall sagging. Only slight tenderness over mastoid; no edema. Entire left side paralyzed, with occasional twitching of muscles. The right pupil was dilated, not reacting to light, and the eye was turned out. At this time the eye grounds were only slightly congested. Nose, throat and left ear normal. Temperature, 100°. Pulse, 78.

A diagnosis of brain abscess was made and operation advised. A neurologist examined the case and agreed with the diagnosis.

Blood count September 3: white cells, 22,590; lymphocytes, 10; neutrophiles, 90; Wassermann, negative. Smear from ear showed staphylococcus aureus and also a gram negative and a gram positive bacillus. The case was then transferred to my service.

Mastoidectomy was performed on the morning of September 4. A very small amount of pus was found in the aditus. No necrosis. Neither dura nor sinus was exposed. As the mastoid involvement did not account for the symptoms, the incision was extended up and the skull trephined one and one-half inches above and one-half inch posterior to the external auditory canal. A piece of bone the size of a silver dollar was removed. The dura seemed healthy; no apparent bulging and no pulsation. I incised the dura and explored the brain in three directions with a cataract knife to a depth of about one and one-fourth inches, but found nothing. The wound was closed and the patient returned to the ward.

September 5: Patient much improved. Paralysis almost entirely gone; mind seemed clear and bright, and patient stated that he felt "fine."

September 6: White count, 18,000. Patient continues to do nicely. Temperature, 100°; pulse, 76.

September 9: While count, 28,300. Patient passed a bad night. Respiration very bad, according to nurse (Cheyne-Stokes breathing). Paralysis again of the entire left side. Patient unconscious and in very serious condition. Temperature, 99°; pulse, 66. Again taken to the operating room, more bone removed higher up and lower down, and brain explored in six different directions through two incisions in the dura. No pus found. I was afraid to attempt any more cutting of the brain. It seemed useless.

September 10: To my surprise I found the patient again greatly improved; paralysis less, but not entirely gone. White count, 22,280. Temperature, 99°; pulse, 64.

September 12: Wound clean; patient continued to improve. White count, 20,800. Temperature, 100°; pulse, 78.

September 23: Paralysis less. White count, 11,900. Up 'till this time the wound was clean. I now noticed considerable pus coming from the

BLOOD COUNTS

	Sept. 3	Sept. 6	Sept. 9	Sept. 10	Sept. 12	Sept. 15
White	22,590	18,000	28,300	22,280	20,500	16,300
Small lymphocytes	10.	8.	8.	9.	1.	3.
Neutrophiles	90.	86.	91.	88.	87.	85.
Large lymphocytes		5.	1.	2.	11.	12.
Eosinophiles		1.		1.	0.	0.
Basophiles					0.	0.

	Sept. 16	Sept. 17	Sept. 18	Sept. 23	Oct. 27
White	18,050	13,000	19,700	11,900	12,552
Small lymphocytes	1.	5.	1.	4.	
Neutrophiles	83.	79.	84.	70.	74.
Large lymphocytes	0.	16.	15.	26.	26.
Eosinophiles	0.	0.	0.	0.	
Basophiles	0.	0.	0.	0.	

opening in the dura. It will not be necessary to give further history, except to say that the patient continued to improve, the blood count gradually going down to 6,000. Temperature, normal; pulse, 80.

November 1: There appeared three small cerebral hernias through the line of incision, corresponding to the three incisions in the dura. I was able to get rid of part of the hernia. However, one the size of a hen's egg persisted.

November 26: Under local anesthesia I succeeded in transplanting a piece of fascia lata, stitching it to the dura, then closing the skin incision. The wound healed by first intention. The patient left the hospital on January 3, able to walk and use his arm very well. I am sure he will eventually get entire use of the left side.

Urine September 18: Few hyaline casts.

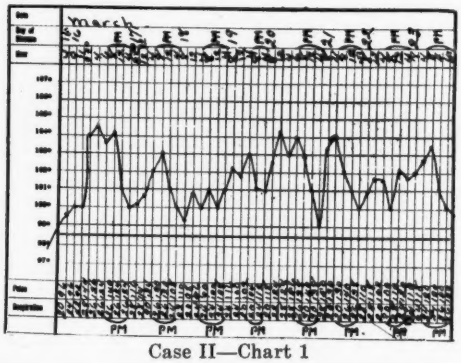
Culture from mastoid and external ear canal September 10, 1915: Staphylococcus aureus and few gram positive and negative bacilli.

The points worth considering are:

1. The suddenness of onset. I was particularly careful and could find positively no history of previous trouble in either ear. Patient and wife both stated positively that he had never had any previous trouble with his ears.
2. The amount of cutting from which the brain will recover.
3. In what way if not by abscess can we account for the symptoms? No pus was ever found—only small amount in mastoid antrum.
4. The wound was clean for several weeks after the last operation and then suddenly it began to discharge pus. Could the abscess have worked its way out through one of the incisions?

Case II.—This case has a number of interesting features which I think will make it well worth while reporting.

L. K., colored, female, age 15, was admitted to the Charity Hospital Nose and Throat Department February 26, 1917, complaining of discharge from the right ear and pain over the mastoid. There was swelling and pain in the right side



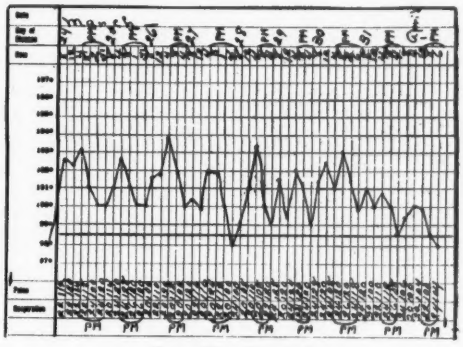
Case II—Chart 1

of the neck. She only remained in the ward twenty-four hours and then deserted.

On March 15, 1917, the patient was brought to my Clinic at the Touro Infirmary in very bad condition. I at once had her put in an ambulance and sent to the Charity Hospital, where she was admitted to my service.

Family History: Negative.

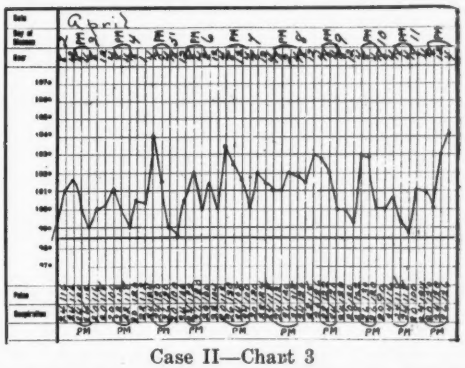
Past History: Measles and whooping cough some years ago. Typhoid fever eight years ago. Tonsils and adenoids removed four years ago. At times during the past two years patient has had a slight discharge from the right ear.



Case II—Chart 2

Present Illness: Began about the middle of February with a slight discharge from the right ear. This, the mother claims, ceased in about ten days. On February 24 the right ear began to ache suddenly and the patient had high fever. The pain was very severe for three or four days and then became less. Mastoid region became very tender. Temperature was high and several times she had a slight chill. About the last of February her neck became stiff and the pain extended from the mastoid down the right side of the neck. At this time the patient was admitted to the Charity Hospital, only remaining twenty-four hours, and then deserting. Again admitted March 15. Semi-comatose, very stupid, and in all respects a very sick girl.

Examination: Fairly well-developed but poorly-nourished colored girl. Skin dry and hot. Tongue

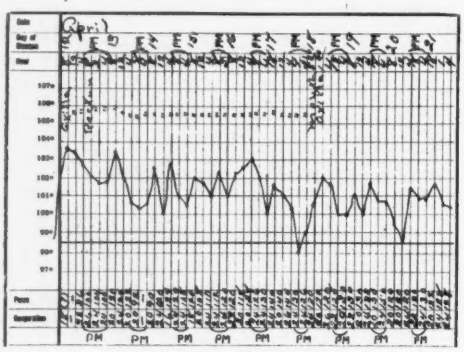


Case II—Chart 3

coated and dry. Eyes: Vision roughly good; some engorgement of retinal vessels, but no choked disc. Eye movements free in all direc-

tions. Nystagmus on lateral vision in both eyes; much more marked to right. Pupils active to light and accommodation.

Motor weakness to right side of face, more marked in lower segments. Right nerve deafness. Loss of sense of position, asynergy and apparently some motor weakness in right upper extremity; ataxia marked on grasping movements. Over-points to right. Right adiodochokinesis. Falls to right while attempting to sit in bed. (No attempt made to have the patient stand.) Hypotonia of entire right side, without disturbance of reflexes.



Case II—Chart 4

Knee and ankle jerks slightly exaggerated on left side. Atypical plantar reflex on left.

Urine: Negative.
Total white blood count, 17,680.
Lymphocytes, 12.
Neutrophiles, 87.
Eosinophiles, 87.

Wassermann negative. Temperature 101°.

Mastoid tender on pressure. Percussion of entire right side of head causes pain. Right ear discharging small quantity of thin pus.

Drum not bulging nor posterior wall sagging.

Along anterior border of sterno-mastoid muscle on palpation we could feel some swelling and find some tenderness.

March 16, 1917: Under ether anesthesia right mastoid opened. Found a very thick schlerotic cortex; no cells. Antrum was full of a necrotic membrane with very foul odor; no pus. This membrane was removed. The bone covering the sinus region was found missing. There was what appeared to be a large sinus bulged into the wound. This was not hard and seemed to fluctuate. I decided to open it, as this did not look like a normal sinus. Upon opening it large amount of thick pus and degenerated brain matter came out. Artery forceps held into this opening fell two or three inches downward and inward. After gentle irrigation a large rubber tube was inserted to the bottom of the abscess and the rest of the wound was lightly packed. The lateral sinus could not be located, so a diagnosis of sinus thrombosis rupturing into the cerebellum causing abscess was made.

For the next few days the patient was greatly improved. On the third day after operation the patient had a severe chill. The temperature went up to 104°. The neck became very tender and a large sausage-shaped mass could be felt. Blood culture was made on two different occasions. The first was negative. The second gave a pure culture of pneumococcus.

March 21, 1917: Under ether anesthesia the usual incision was made along the anterior border of the sterno-mastoid muscle for jugular resection. Found muscles all matted together, and with difficulty found the carotid artery, which was dissected out for three inches. Also encountered a large abscess, but could find no jugular vein.

Made a probable diagnosis of jugular thrombosis rupturing into the neck.

The patient improved; the neck wound healed in about one week; the abscess cavity discharged less, and finally all drainage tubes were removed. The patient was perfectly conscious; ate heartily and was anxious to go home, yet she still ran a septic temperature.

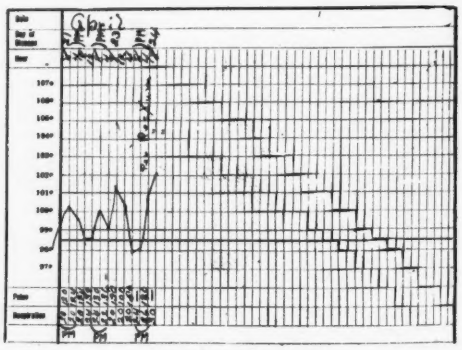
March 27, 1912: W. B. count, 13,430.
Lymphocytes, 12.
Neutrophiles, 79.
Eosinophiles, 1.
April 18, 1917: W. B. count, 14,630.
Neutrophiles, 83.
Lymphocytes, 17.

April 18, 1917: While dressing the case about two ounces of cerebro-spinal fluid came out. Also a hernia of the brain substance is beginning.

April 22, 1917: Cerebro-spinal fluid keeps dressing wet. Large hernia.

April 24, 1917: Patient died, remaining conscious up 'till two hours before death.

Autopsy: On removing the brain, the lateral sinus could be traced from above for a short distance. Then we found a large abscess cavity



Case II—Chart 5

destroying over three-fourths of the cerebellum and opening into the third ventricle. Again located the sinus going into the jugular bulb. This was followed into the neck. Could locate the jugular vein for about two inches. Then a fibrous cord corresponding to the obliterated vein and adhesions from the abscess. The vein was again found parulous in the lower part of the neck.

The diagnoses of lateral sinus thrombosis rupturing into cerebellum and jugular thrombosis rupturing into neck were both confirmed.

DISCUSSION

Dr. William Marvyn Johnson, New Orleans, La.—These cases are very interesting, in that they are rather unusual. One of them particularly serves to emphasize the well-established fact that a discharging ear, no matter whether there be pain, excessive temperature, nor how innocently it may seem at times, is always a serious menace to the life of the patient. No one fact is established better than that these ear conditions should not be temporized with. I can not emphasize too strongly the importance of an early and thorough incision of the ear drum. Many a mastoid would have been saved intact had an incision been made in the drum when the first symptoms presented themselves.

Mastoiditis in its simplest form is becoming remarkably scarce. This is due, first, to the educational progress of the masses. We are now consulted for earache. The patient does not always try the various remedies suggested by his friends and enemies before seeing his doctor.

Second, the aurist is instituting early a more thorough treatment, realizing the importance of opening the drum without waiting to see what may happen, watching more carefully the nose and throat during colds, measles, etc. Of course, we must not overlook those cases which, at the time they present themselves, have a normal ear drum any more than those which have normal or subnormal temperature.

Dr. E. H. Cary, Dallas, Tex.—Let me describe a somewhat similar case. The patient was a young man nineteen years of age whom I saw two or three years ago. He had pain in the ear and was treated for a few days by a local doctor, when he had a convulsion and lost consciousness. Then he became conscious again and was paralyzed on his left side; that is, his hand was paralyzed, and, I think, the whole left side. He got back the motion of his leg, leaving his hand paralyzed. He got a little better, apparently, and then grew worse again. Convulsions came again, and the doctor from Jacksonville, Tex., sent him to me because of the complication. I found, on the opposite side, in his ear, a reason for the pain that he had suffered with a week before. He had had a slight discharge. There was evidence of a slight serous discharge. It was not a prominent factor in the case then. He had had some redness of the tympanic ring, but did not have bulging, and there was no tenderness over the mastoid. I got the idea that the man had really a specific history, which, of course, meant a brain abscess, and pretty well localized, to be able to give this left-sided paralysis. I had him shaved, prepared for operation and had a blood count made. I was trying to recall whether he showed choked disc or not. I think, if I remember correctly, that he did not; because that was one of the reasons. Twenty-five per cent. of cases will not show it. It is valuable, however, to know what the optic disc shows. In the meantime he seemed to be getting better. He could squeeze my hand a little and looked better. His pulse was slow and he had every symptom on earth, but it did not convince one that he was in danger. You see cases like that which continue four or five weeks and then terminate. I tapped him and drew off some fluid under pressure, and then thought I would wait a little while before operating. His pulse was better and he seemed better. I continued to wait and he got well. I never did operate, and I wonder what to call it. I do not think Dr. Patton had any pus in that case of his. He created pus finally. He kept on puncturing until he got it. He had a case such as the one I had. He had in all probability a lack of the proper barrier against infection, and the infection got through and something like a thrombus disturbed the whole vascular tree and produced acute edema. He got pus and pressure puncture. He gave irrigation, and it got well. I have not been fortunate enough to see a brain abscess get well, but that case did, and you can explain it in that way.

Dr. Fontaine Moore, Memphis, Tenn.—This is certainly an interesting subject, and it is good to get a variety of discussion on it. Dr. Cary has given us some interesting light on it. When we find the mastoid diseased and these brain symptoms it is hard to resist the temptation to go into the brain. We feel as if there were something there and would like to give the patient the benefit of an operation. I go into the brain secondarily; first pack iodoform gauze against exposed dura if I can do so, and then make a puncture with a sharp-bladed cataract knife, believing that in waiting we give Nature a chance to wall off the abscess, lessening chances of meningitis, and have better drainage than if we went into an acutely infected and edematous dura to begin with.

Last fall an interesting case came to me from a plantation at St. Thomas, across the River. The patient came with pus from an apparent mastoid fistula running down the side of the neck. The ear was dry. There was no drum, but cholesteatoma, and it was indurated. When I attempted to pass the probe and see whether there was a mastoid fistula I had very little success. The Negro was timid. He thought that the wound was sensitive, but I did not believe it was. The x-ray showed the usual sclerotic mastoid. I questioned the man as to trauma and he said that he had never beeen struck, so far as he knew; but that the discharge had persisted for eleven months through this fistula, which was located a quarter of an inch posterior to the auricle and on a line with the external auditory meatus. At operation I found a necrotic gland and some pus. The bone looked healthy. The periosteum was thickened. I thought I would try to find the origin of the pus. The probe did not go in any direction at all. The part was bound down by adhesions. I made a vertical incision, two inches long, back to the occiput. On putting the probe in the occipital suture and rocking the bone a little, a tablespoonful of pus gushed out. I removed a segment of bone and evacuated a large extradural abscess. The man made an uneventful recovery. A week after he said: "I forgot to tell you that three or four months before the ear started to run I was hit over the head with a washboard." Looking on the opposite side I found a little scar under his thick hair. That was the fracture that had started the trouble. It was at first a sterile fracture,

but had broken down, and the pus had followed the path of least resistance, boring its way out back of the ear. This is the only case of the kind that I have seen or heard of, so I thought I would mention it.

Dr. Patton (closing).—Dr. Cary's case is certainly interesting. I do not quite agree with him, however. I do not believe that you would get thirty thousand leukocytes without some pus. You might have just a mild meningitis, as the doctor says. Another thing is that this case had no pus and improvement began right after incision. The first operation was a decompression. The second operation was also a decompression, but it gave more room to expand and at once the leukocyte count began to drop. What I can not understand is that there was no ear trouble twenty-four hours before this began. How did we get a middle-ear condition and in twenty-four hours get one bad enough to cause paralysis? In opening up the brain abscesses, the otologist is greatly criticised. Dr. Sharp, of New York, who does a great deal of brain work, said: "You fellows have no conception of asepsis at all. You ought always to go above and open the abscess." You can not always do this. There was no pus in the mastoid and no necrosis of the attic. I thought that it was wise to close it and to go in from above, so as to have a sterile wound and not infect the brain.

Dr. Moore's case was very interesting. I think that syphilis had something to do with that case. Negroes are often syphilitic.

THE REMOVAL OF FOREIGN BODIES FROM THE EYE-BALL AND ORBITAL CAVITY: REPORT OF CASES*

BY DUNBAR ROY, M.D.,
Atlanta, Ga.

There is no diversity of opinion as to the seriousness of eye injuries due to the entrance of foreign bodies. Nor is there any diversity as to the necessity of extracting the same if the prognosis is to be favorable. In cases of foreign bodies such as iron, or steel, all ophthalmologists are agreed that their removal by some form of electro-magnet is the best procedure. Opinions differ as to the kind of magnet to be used, whether the so-called giant or hand-electro magnet is the better. If the former, then the question arises whether in case of particles of iron or steel in the posterior chamber of the eye, it is best to pull it around the lens through the pupil into the anterior chamber or to make a scleral incision at the point nearest the foreign body as localized by the x-ray and remove the same through this incision.

Here again must be recognized the personal equation of the operator and his use of that technique which has given him the best results. Personally the writer has obtained far better results by the use of the hand electro-magnet such as Johnson's introducing the point inside the eye-ball, than by the use of the Haab's giant magnet.

In the case of particles of brass, shot or other non-magnetic substances, good results depend upon the operative dexterity or good luck of the surgeon. Few ophthalmologists would admit that they had ever seen two absolutely similar cases of injury to the eye where foreign bodies had penetrated the globe and where the same operative technique was suitable for both. In other words, every case teaches the observant surgeon something new which will be of benefit to him in the management of future cases. For this reason every case of this kind reported in ophthalmic literature may act as a guide to others in some of their future experiences. My records show 26 cases of perforation of the eye-ball by foreign bodies where these were lodged either in the ball itself or behind in the orbital cavity. Five of these were of such marked interest that they will be reported today with a few words of comment.

CASE REPORTS

Case 1—E. R., colored, age 25, was injured in the right eye at the Atlanta Steel Works on October 6, 1913. This patient was seen two hours after the injury, having been taken to the City Hospital. The left eye had been lost several years ago through injury. While at work a particle of steel from a hammer struck the good eye, making a linear cut entirely across the centre of the cornea.

Examination showed this cut to extend entirely across the cornea, with protruding iris, and the whole eye filled with blood.

An electro-hand magnet was immediately used, thrust deep into the eye-ball. On the first attempt the particle of steel was adherent to the point of magnet. All tags of iris were cut away, the cornea wound closely coaptated, and atropine solution used freely. Following this the lids were closed after filling the external part of the eye with bichlorid vaseline; and a compressed bandage was applied.

This treatment was continued daily with the patient in bed; and in two weeks the corneal wound was entirely healed, but with little or no

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

signs of a pupil. The eye was treated for two months until all manifestation of irritation had ceased and there was apparently only the horizontal white linear cicatrix. An irregular pupil existed, filled with some cicatricial exudate and opaque lens. During the whole treatment he was taking large doses of the iodid of potash to aid the absorption of the blood which had filled both the anterior and posterior chamber. He still had good light projection. At the end of three months an iridectomy was undertaken in the lower inner quadrant of the cornea, which showed the largest area of clear tissue. A fairly good pupil was obtained. The cicatricial tissue and lens were then thoroughly broken up and some particles removed with forceps and a spoon. Atropine solution was freely used following this operation, and the eye was bandaged for twenty-four hours. Dionin was also instilled at intervals. This treatment was continued for two months, at the end of which time he could see the moving of large objects close before his eye. On January 27 of this year the patient was examined at my office. I found a very good pupil at the inner downward quadrant. There is still some membranous cataract at the centre of the pupil. His vision with correction was 20/70. He is still employed by the same company for certain manual labor.

This case is of interest as showing what may be accomplished in an injured eye which seemingly has been totally destroyed. Here was a case where a particle of steel had cut through the cornea and was lodged in the posterior chamber. Nothing short of a phthisis bulb could be the prognosis. The first result certainly teaches us to give every injured eye prolonged and careful treatment before resorting to enucleation.

Case 2—E. M., white, age 22, was injured at the Atlanta Steel Works September 26, 1913. He was seen at the hospital early on the morning of the 27th.

The following history was given: While cutting a brass rod on the evening before, a particle flew up and struck the left eye.

Examination showed some irritative reaction. There was a small cut at the edge of the cornea downward and outward. The fundus was clear. For sometime no foreign body could be discovered until by means of the ophthalmoscope and the patient looking far downward, a small brass particle could be seen between the iris and cornea at the inferior periphery of the anterior chamber. When the patient looked directly in front it was impossible to see the particle of brass.

The eye was immediately cocainized and an attempt was made to extract the foreign body. With an angular keratome an incision was made into the anterior chamber through the original wound extending out temporally. The cornea and iris immediately came in contact, thus obliterating the anterior chamber. With a pair of very delicate straight forceps without teeth an attempt was made to grasp the foreign body. This could be done, but the particle of brass could not be disentangled from the iris and as it was adherent to the peripheral portion, where too much traction might cause a separation at the pars ciliaris. It then occurred to the writer to grasp the pupillary margin of the iris and make strong traction upward and thus see if the particle of brass could not be brought in view. The very first attempt succeeded and my assistant had no trouble in grasping the foreign body and extracting it, the iris dropping back to its normal position without injury or distortion of the pupil.

Atropine was instilled and a compress bandage applied.

The eye healed without disturbance and the final vision was 20/40, there being one or two small opacities in the lens. These have remained stationary.

This case is interesting because of the position of the particle of brass. The ease of bringing the foreign body in a position where it could readily be removed without injury to the iris certainly offers a satisfactory technique.

Case 3—C. A. L., white, male, age 13, was seen on January 15, 1914.

On December 17, 1913, while out hunting with another boy, he was accidentally shot in the left eye. For several days the eye was very red and inflamed. Not much pain. This gradually disappeared. He said that his vision was fairly good until January 9, one month after the accident, when this disappeared.

On examination there was no external sign of inflammation. No point of rupture could be seen. No pain nor photophobia. The iris was tremulous. The pupil was fully dilated with atrophine. No red reflex could be obtained with the opthalmoscope. By oblique illumination the lens could be seen dislocated downward and outward. The posterior chamber seemed filled with an organized blood clot. There was vision of waving of the hand. No foreign body could be discovered. The iris was already becoming discolored.

An x-ray was taken which showed the presence and location of the shot. According to these measurements it was situated 10 mm. below the horizontal plane of the cornea, 8 mm. to the nasal side of the vertical plane and 14.5 mm. back of the centre of the cornea. It seemed probably that the shot was just outside the eye-ball on the nasal side of the orbital cavity.

Under ether the conjunctiva at the inner canthus was severed and the internal rectus cut. Forceps introduced into the orbital wound could not detect a foreign body, but in rotating the ball strongly outward the shot could be seen firmly imbedded in the sclera. The eye-ball was then enucleated.

Examination then showed that the shot had passed into the tunics of the ball, part of it being inside and a part outside the ball. It was firmly fixed in an organized exudate and could not possibly have been removed except by cutting through the walls.

My records show 10 cases of injury to the eye-ball from bird shot, but this was

the only case where the shot was imbedded in the walls with one-half protruding into the posterior chamber and one-half showing externally. The fact that the iris showed siderosis was sufficient to indicate that the shot was at least partially inside the ball, although there was a possibility that more than one shot had penetrated the globe.

Since writing this paper another case of accidental injury to the eye from bird shot has come under my observation.

Mr. H., white, aged 45, while out hunting, accidentally received in his face the contents of a fire from the gun of a friend who did not know of his presence beyond a thicket. Fortunately it was some distance, but he received a good peppering on the right side of his face and jaw, and one shot entered the left eye through the sclera about 8 or 10 mm. from the nasal edge of the cornea.

He was seen two hours after the accident. There was considerable hemorrhage from the injured eye. There was no vision, and the posterior chamber was filled with blood. He was sent immediately to the hospital, where an x-ray showed the shot to be a few millimeters behind the eye-ball, lodged in the orbital fat. He was put to bed with the application of atropine drops and cold applications. He didn't suffer any pain. The pupil was kept dilated.

The case seemed to promise a satisfactory termination for two weeks, but at the end of that time the patient was suffering so much pain and the eye was so irritated that it was enucleated. We were not able to find the shot in the orbital cavity, nor was it found on the interior of the eye. There has been no further trouble with the orbital cavity.

The question of a foreign body such as a small piece of steel, brass, iron or lead shot remaining quiescent in the orbital cavity without producing any untoward complications is one open to arguments on both sides. That is, should an operation be considered for its removal or even the enucleation of the eye-ball itself, if all vision has been permanently destroyed as in the case here reported, or should the injured eye be treated politically, i. e., with "watchful waiting," and an attempt be made at least to save the eye-ball itself? Literature shows that a number of cases have been reported where such foreign bodies have remained indefinitely quiescent in the orbital fat without further injury to the eye-ball itself.

Case 4—F. M., male, colored, age 21, sustained a right eye injury at the Pratt Engineering and Machine Company about 10:30 A. M. on November 18, 1915. The patient was hammering a steel rivet when a small particle flew up and struck his right eye. Was seen two hours later.

Examination showed a clean cut through the cornea and sclera at the temporal side 7 mm. in length. Considerable blood was coming from this cut. The anterior chamber was filled with blood. The iris was protruding.

The patient's eye was immediately cocainized and all tags of iris were removed. Both the giant and small electro-magnet were used without response. Atropine was freely used, the eye filled with bichlorid vasseline and a compress bandage applied. An x-ray was taken the next day which showed that there had been a double perforation and the foreign body was situated just behind the ball in the orbital cavity. The eye was treated with atropine solution and hot applications. This latter was used because there was very marked chemosis of the conjunctiva for several days, but no infection. This latter gradually subsided and the eye eventually healed.

The hemorrhage in the posterior chamber has prevented any return of vision, as the anterior chamber, pupil, and lens seem perfectly clear. The foreign body still remains in the orbit. Time alone can tell what will be the outcome, although at present he is perfectly comfortable. Until there is some statistical presentation as to the final outcome of those cases where a foreign body is left in the orbit we can not determine which is the best procedure to be adapted.

Experience leads me to the conclusion that profuse hemorrhages within the eye-ball from traumatism, whether accompanied by perforation or not, render the prognosis exceedingly grave. The writer has only recently had to enucleate an eye three weeks after it had been violently struck by the lash from a buggy whip and where the posterior chamber was filled with blood immediately after the accident, and where such an iridocyclitis arose that an operation was urgently demanded.

Case 5—This proved to be a most interesting case. Miss L. H., age 18, of Dublin, Ga., was accidentally shot in the right eye on January 1, 1915, by an air gun using a B. B. shot. At the time it was thought that the shot only struck the eye severely, producing a contusion without perforation. She was seen by the writer two days later, January 3.

On examination there was found no abrasion of the cornea, but a little edema of the conjunctiva at the inner canthus over the sclera. Vision was fingers at fifteen feet. There was no pain and the pupil was widely dilated under atropine solution. The ophthamoscope showed some haziness of the vitreous at two or three hemorrhages in the retina downward and nasalward. There was a rent in the conjunctiva at the point of edema where the local physician had probed beneath this membrane. On probing again no signs of a foreign body could be discovered. An x-ray was immediately taken, which showed the foreign body outside the eye-ball on the nasal side of the orbit near the posterior pole.

Under cocain anesthesia the internal rectus was cut and the conjunctiva dissected from the eye-ball. By rotating the ball outward and with a pair of curved iridectomy forceps the shot was readily grasped and removed without difficulty. The parts were cleaned, the muscle and con-

junctiva sutured, the eye filled with bichlorid vaseline and a bandage applied.

Two days later the patient returned home, showing at the time very little irritation in the eye. She made a good recovery, and May 21, five months later, an examination was made with the following results: There was no sign of a scar. The muscle balance was apparently normal, and vision was 20/40. The ophthalmoscope showed a perfectly clear fundus, but the old spots of hemorrhage had undergone pigmentation and atrophy, thus leaving scars on the retina. Fortunately the macula was not involved.

This case will show the value of the x-ray since we would certainly have concluded that no foreign body was present after a most thorough probing and as there was so little sign of severe laceration. The case is also unique in that the shot, a large one, perforated the conjunctiva and was deflected by the sclera to the inner side, and passed around the eye-ball between these two membranes.

The management of foreign bodies within the eye-ball and within the orbital cavity requires a good judgment to be supplemented with considerable clinical experience. The writer agrees thoroughly with Dr. Stieren, of Pittsburg, who in 1913 thus expressed himself in a paper upon this same subject: "Searching for a foreign body in the tissues of the orbit, even though it has been accurately localized, is a more or less difficult procedure. When one considers the damage that can be done by surgical interference to muscles, nerves and blood vessels in the deeper parts of the orbit, a conservative course is the better one, the foreign body being allowed to remain unless there is urgent demand for its removal."

Since writing this paper I have had another case with the shot half way into the eye. I had to enucleate the eye.

DISCUSSION

Dr. Marcus Feingold, New Orleans, La.—The essayist correctly says that no two cases of foreign body in the eye are exactly alike. And it is just this feature that will make discussion of his paper so difficult. The first case he reports shows well the value of extreme patience and close watching. At the same time we must acknowledge that a good many factors enter into the lucky or fatal outcome of a case, factors that we can not fully control and account for. To remove every foreign body that has entered an eye may not always be so good a procedure as one might think. Especially do I feel this way about the bird shot injuries that we so often see during every hunting season. In New Orleans we see every year at our clinics about three or four cases of this kind and have made it a practice not to attempt the removal of the bullet unless it actually presents itself.

In illustration of this principle I should like to report the following cases to show that this procedure is not so unreasonable as it might appear. On January 1, 1914, a man of 52 years received a full load of bird shot in the face. In consequence of this the left eye showed a perforation of the sclera some distance below the cornea and a hemorrhage was found in the interior of the right eye which was attributed to contusion only. The x-ray showed a bird shot in the left eye. No attempt was made to enter the eye-ball in search for the bullet. The patient, after long treatment with mercury, iodid of potash, etc., finally recovered good vision of the right eye and could even recognize large objects with the left eye. The left eye has good light projection all around.

Another man aged 38 years, while hunting last year, received the full charge of his friend's shotgun in his face. A perforation of the left cornea a little below the center with prolapse of the iris and traumatic cataract was found on admission to the hospital the next day. The x-ray showed shot in each orbit and one in the left eye. Owing to external conditions no attempt was made to excise the prolapsed iris, treatment being limited to applications of atropin locally and mercury, iodid of potash and aspirin internally. At the end of four months, after absorption of the lens, the eye could count fingers in all directions, and with dilated pupil a good view of the fundus could be had, showing a large area of destruction of choroid and retina in the nasal part.

As to the question of sympathetic ophthalmia, there seems to be little reason to fear it with lead shot lodged in the eye. European observers are of the same opinion and for this reason we have not been more radical.

The following case illustrates the peculiar course a bullet will at times take: A colored boy called at the Charity Hospital Clinic with the statement that he had been shot in the right eye by an air rifle some months before. We found a normal fundus, normal media and perfect vision, and only after a careful inspection was the bullet located in the subconjunctival tissue near the equator a little below the external rectus. The bullet was in this case again left alone and we expect it to work its way through the conjunctiva in time.

Dr. H. H. Martin, Savannah, Ga.—I want to congratulate Dr. Roy on his splendid results in the cases reported, and also to emphasize what he has said about conservative surgery of the eye. In this way, when we have a better understanding of asepsis, we can wait much longer than we could with the fear of sympathetic ophthalmia before us.

I also agree with Dr. Roy about the use of the hand magnet instead of the more powerful one. The greatest injury that results from foreign bodies in the eye is infection; and the longer the foreign body remains in the eye, the greater is the chance of infection. The use of the Haab magnet involves great delay and you can use the hand magnet in a few minutes.

I recently had an experience similar to the case described as foreign body entangled in the iris. I got out of my difficulty a little more radically. I made an incision with a keratome

opening in the sclerocorneal margin, a little to the outside of the wound, and put my iris forceps in and made an iridectomy, taking a piece of the iris out; and the foreign body came with it. In the case of foreign bodies that are not magnetic inside the eye-ball they had best be left alone (unless they can be easily removed with forceps) until enucleation is demanded; but with magnetic foreign bodies an immediate attempt should be made to remove them with the small magnet. As for foreign bodies in the orbit and between the conjunctiva and the sclera, we have all seen these cases. I saw one in a Negro boy just before leaving home, a few weeks ago. He had been shot with very small bird shot; and a glancing groove on his face told the direction in which the shot had entered the eye. I did not see him until nearly twenty-four hours after the injury and there had been no attempt to remove any of the shot. There existed a large hemorrhage inside the eye that almost covered the fundus; but you could see the vitreous and the anterior chamber full of blood. We practiced Dr. Roy's idea of conservatism, and within a few days all the inflammation had subsided, and the eye began to look like a pretty good, clear, normal organ. When I finally could raise the upper lid, I found three shot in between the conjunctiva and the sclera, showing one-third of an inch as the distance which they had traveled between the sclera and the conjunctiva. There were also several shot imbedded in the upper lid. The patient recovered nicely, after the removal of these. The shot that entered the eye-ball I was not able to remove; because the vitreous had not cleared up sufficiently when I last saw it. I want to emphasize the point about not being afraid of sympathetic ophthalmia. Many an eye can now be saved that could not be ten years ago.

Dr. Frank D. Boyd, Fort Worth, Tex.—I wish to report a case that was, to me, not only interesting, but exceedingly unique. It was also a case of mistake in diagnosis. This patient, a gentleman possibly thirty years old, came to us with a history of having had the eyes inflamed for two or three days. It looked like interstitial keratitis. There was an exceedingly inflamed condition of the whole eye-ball. We kept him under treatment for quite a while. The history was negative. We could not find any reason for the eye trouble. We put him on iodid of potash, but did not make a Wassermann because he gave a positive history of lues. Within ten days or two weeks the eye began to clear up and I saw in the anterior chamber what was apparently a bright piece of glass, low down. With an angular keratome and forceps it was easily delivered. After that he said that he remembered that when he was a boy, six or seven years old, he had put some powder in a bottle and blown it up and that some fragments must have gone into the eye-ball. That piece of glass had been there nearly twenty-five years. One could hardly believe that it could have remained there all that time without having given any trouble until a few days before I saw him; but that is the fact. He recovered and had normal vision.

Dr. George H. Price, Nashville, Tenn.—I was very much interested in the reports of cases of Dr. Roy and Dr. Feingold. Like Dr. Feingold, I believe that in cases in which you have perforating wounds of the eye by small shot it is better to wait, perhaps. In cases where you have brass in the eye, if it is lodged on the anterior surface of the iris, it will remain there indefinitely just as the glass did in the case mentioned by Dr. Boyd. I have seeen a piece of brass that had been there twenty years and had never given any trouble. I have seen a piece of copper from a small rifle shell, which had been dropped into a can and some boiling material poured on it. In exploding, it had ruined one of this boy's eyes and a piece had perforated the cornea and iris of his other eye, and had stuck in the lens. It is still there.

My experience with foreign bodies is that even though we can remove them with the magnet we do not always escape the trouble, even when we have removed the foreign body. Unfortunately, these foreign bodies carry with them, sometimes, an infectious agent, which gives rise to a serious problem. I have seen the foreign body removed and in twenty-four or thirty-six hours pus formed, and enucleation later became necessary. If the piece of steel comes from a clean chisel or hammer head, when the man is striking it forcibly enough to sterilize it by heat, you do not get the reaction; but if the piece of steel or iron is from the dirty wheels of a car, locomotive or other vehicle, and once perforates the eye, the chances are that you are going to have pus in the eye, even 'though the steel be removed. I had two cases of the first kind. A year or more ago a man was struck in the eye, the piece of steel passing through the eye and out at the temporal side. He recovered with pretty good vision. The particle was located in the cellular tissue behind. Another case similar to that is still under observation.

Dr. John O. McReynolds, Dallas, Tex.—This subject is extremely interesting and important and Dr. Roy has brought out some very instructive points with reference to sympathetic ophthalmia. I think that we should get clearly fixed in our minds that this danger is not determined by the presence or absence of any particular kind of foreign body in the eye. It is the character of inflammatory reaction following the injury that determines whether you will have the development of sympathetic ophthalmia or not.

The histories of all cases of sympathetic ophthalmia which I have reviewed (in Great Britain and in this country) show that it develops not so often from foreign bodies retained in the globe as from punctured wounds. So the mere fact that a foreign body has been removed does not release us from solicitude concerning the case, and it is important to impress upon the patient this fact: that the bacteria are not killed as soon as we have extracted the foreign body. It is the wound that is the thing, and we should watch the patient for a few days and see whether or not any inflammatory reaction takes place. If, after ten days, everything proceeds quietly and the eye does not seem to become inflamed, we are not likely to have sympathetic ophthalmia occur unless there should develop an iridocyclitis, which precedes every sympathetic ophthalmia.

SPECIAL ARTICLES

THE VALUE OF THE CLASSICS AS A PART OF THE STUDIES PREPARATORY TO MEDICINE*

By Lewellys F. Barker, M.D.,
Baltimore, Md.

A LIBERAL EDUCATION PRE-REQUISITE TO PROFESSIONAL STUDIES

That men and women contemplating the study of medicine should first receive a liberal education will now scarcely be disputed by any one. Medicine, like law, has always been regarded as one of the "learned professions" to which a liberal education is a pre-requisite. To be able to understand, to convince, and to persuade one's fellow man, as it is the function of physicians continuously to try to do, something more than endowment by Nature is necessary: the intellect must be disciplined, the emotions must be schooled, the sympathies and imaginative powers must be developed, and what we mean by "will" must be educated. Successfully to practice medicine, we need to think clearly, to feel deeply, to strive earnestly. From early childhood on, it is desirable that the prospective medical student should strengthen his body, train his intellect, cultivate his better feelings, and steel his will so that he may come into possession of the knowledge and the character that will fit him for the work of his profession. Assuming a man born with a good brain, the more liberal his education, the more likely will he be to attain leadership in any profession that he enters. Now and again in the world's history, the attempt has been made to find some "short cut" into the medical profession, some "royal road" to medical learning. Such attempts have tried to justify themselves upon the ground that time might be saved, that less money need be spent, or that useless effort might be avoided. The results of such attempts have always been disastrous, not only to the physicians themselves but also to the standing of the medical profession and to the welfare of the public that the profession serves. No more lamentable example could be cited than that of the poorer proprietary medical school with low standards of admission from which we in this country have only just recently become emancipated. The pre-medical education was not liberal and the medical education was neither scientific nor practical. When we think of the professional inefficiency and of the narrowed horizons of the men who graduated from the worst of these schools, when we recall the injury done to our profession by the admission into it of ignorant and characterless members, when we consider what the public has suffered and in some instances is still suffering at their hands, every American must regret that some way had not earlier been found properly to select the medical students and adequately to protect both the public and the profession from men of poor training and of low ideals. Let us hope that the bars that have been put up may not again be thrown down. Even the scarcity of physicians determined by war will not justify the graduation of poorly or narrowly educated men. The happiness and efficiency of the doctor, the dignity of the medical profession, and the highest welfare of the public are dependent upon a liberal education precedent to the study of medicine.

WHAT CONSTITUTES A LIBERAL EDUCATION

If we are now in accord that the study of medicine should be undertaken only by men and women who have had the advantages of a liberal education, it is desirable that we should also reach some agreement as to just what it means to be liberally educated. It is perhaps not surprising that differences of opinion should exist here, for our personal bias may make us lean on the one hand toward tradition, or, on the other, toward radical reform. But, surely, a careful survey of the situation should reveal to us the essentials of a liberal education; and on these main fea-

*Read in Conference on Medical Education, Southern Medical Association, Eleventh Annual Meeting, Nov. 12-15, 1917.

tures we may agree, even though a wide latitude may be permitted as regards details.

A liberal education consists in preparation for suitable participation in the activities that all educated men may share in common, whereas a special or professional education prepares for the activities of one special trade or profession. A liberal education is to be thought of as preparation for life as a whole, as fitting men and women while they live to be as useful as possible and to enjoy life as much as they can. In early childhood, nothing is more important in education than the encouragement of (1) the use of the sense-organs and (2) the use of language. Through the first the child learns to touch, to smell, to taste, to see, and to hear, and the effort should be made to train the attention of the child sharply to discriminate among his sense-impressions. Such discriminations will involve the use of exact terms in description, for otherwise it is not possible for the child to make others understand precisely what it is he wishes to say. In training a child to accurate observation and exact description, we cultivate in him, as Viscount Bryce has emphasized, two things that are "the foundation of mental vigor—curiosity, i. e., the desire to know—and the habit of thinking." If a child have a normal nervous system it can only be through neglect on the part of parents or teachers that he will fail to acquire a love of knowledge and a pleasure in using his mind. During adolescence, the mind should have the opportunity of becoming generally informed regarding Nature, man, and self. Knowledge of Nature, of the world outside of man, belongs to the domain of the physical sciences; knowledge of mankind and of one's self belongs to the domain of the humanities. A liberal education involves, on the one hand, training in the physical sciences of physics, chemistry, and biology as well as in mathematics upon which the physical sciences are founded; and, on the other hand, a training in the humanities—history, languages, literature, and philosophy. This much all will doubtless admit. Differences of opinion exist, however, first, regarding the amount of time and effort that should be devoted, respectively, to the two great departments of knowledge — the realm of Nature and the realm of man; and, secondly, regarding how much attention in the realm of man shall be paid to the ancient languages and literature and how much to the modern. The time that may legitimately be allotted to a "liberal education" is necessarily limited. How shall we select the subjects? How shall we parcel out the time? Granting that one should not lay down any hard and fast rule that every student, no matter what his special gifts or inclinations may be, shall be compelled to follow, it seems to me that every young person who desires to be liberally educated should be informed of the main contents and should have had some experience in using the methods for studying both the subjects that deal with Nature and the subjects that deal with man. During school and college days there is time to become acquainted with them all. As Dean West has observed: "Mathematics and classics, science and philosophy, history and modern literature are the nobler sons in the household of liberal learning. To have known them all well enough to like them all, no matter which one we come to like most, is the best liberal education." We should neglect neither the physical sciences nor the humanities. We should learn all we can of both; the more we know of both, the more we shall be liberally educated.

THE STUDY OF THE CLASSICS AS A PART OF A LIBERAL EDUCATION

My thesis in a nutshell is (1) that students entering medicine should be liberally educated, (2) that a liberal education includes an education in both the physical sciences and the humanities, and (3) that an education in the classics — the Latin and Greek languages and literature — is an essential part of education in the humanities.

Before presenting the case for Latin and Greek, I must make a frank admission. To my sorrow my own education precedent to medical study was very limited as regards Latin and still more so as regards Greek. But the little I had has been of such real help to me that I have always regretted keenly the lack of more.

I feel it my duty and privilege to encourage young persons preparing for medicine to get a good grounding in the ancient languages and literature, for studies of the classics are helpful to the prospective medical student both for the mental training they yield and for their cultural value.

Most experienced teachers readily admit that an education in the classics is one of the best ways to acquire ideas regarding the nature and laws of language. To understand Latin, one must master Latin grammar, and once Latin grammar has been mastered one will have no difficulty with the grammar of any other language. For exact, concise, logical expression, Latin stands supreme. Greek, though less logical, is more sensitive; in the Greek language, one can briefly express shades of meaning that in modern languages can be conveyed in writing only in awkward and roundabout ways or in speech only by the inflection of the voice. Even a little knowledge of Latin and Greek is of the greatest help not only in understanding the terminology of science, but also in understanding the vocabulary of our ordinary life. The same knowledge lightens our task on taking up the study of French, Italian, or Spanish. Since language is necessary for thought as well as for communication of thought, studies that widen and deepen our knowledge of language are worthy of prosecution by the prospective medical student. As Dean Vaughan has well put it, the study of Latin and Greek compel the "habit of close observation, of attention to detail, of looking for fine distinctions and shades of difference, and the alertness of mind awakened in an individual by these habits prove of inestimable service both in his experimental work in the laboratory and at the bedside of his patient when he becomes a scientific medical man. * * * Carelessness and superficiality are incompatible with the thorough study of Latin and Greek."

The cultural value of a knowledge of the history and the literature of Greece and Rome, surely no really educated man will deny or underestimate. To their history and literature we must go if we desire to study the sources of our own life; without them we can have but an imperfect understanding of our own literature, our own language, and our own ideals. To Greece we owe our principal literary forms, our fundamental ideas in science and in philosophy, and our standards for the recognition and enjoyment of beauty. To Rome we are largely indebted for our courts of law, our system of government, our institutions, our ideals of the family and of national life. The intellect of the Greeks and the character of the Romans are a priceless heritage. Let the modern world do its best to know them and to possess them!

It is often urged that all this cultural value of the classics can be obtained through the reading of translations and of books in English dealing with ancient history or with the thought and life of the Greek and Latin peoples. I think it is probably true that more people get the ideas they have of the literature and the civilization of Greece and Rome from books in English than from a perusal of works in the original languages. Even one who reads Greek and Latin easily and with understanding enjoys good translations. Because of his knowledge of the originals his enjoyment of Dryden's "Virgil," of Jowett's "Plato," of Jebb's "Sophocles" and of Gilbert Murray's "Euripides" will be all the keener. It is not necessary to know the Greek language to enjoy Gomperz's "Greek Thinkers" or Mahaffy's "History of Classical Greek Literature." But while the facts and the thoughts contained in ancient literature can be obtained in translations and in English treatises, it is not possible to translate the style of the originals. Horace has never been adequately translated and never can be, and this is true of the poets generally. Fully to enjoy an ancient author he must be read, not in English equivalents, but in his own words.

To summarize, finally, the mental training that the study of the classics offers, the cultural value of the great literatures of Greece and Rome, and the pleasure derivable from the reading of the ancient authors, especially the poets, in the original, make the inclusion of Latin and Greek, in any plan of education that may be called truly liberal, inevitable. The classical authors still possess their potency.

They can be the rigorous teachers to us that they were to Matthew Arnold, who, writing of them, said that they

"Seized my youth,
And purged its faith and moved its fire,
Showed me the high white star of Truth,
There bade me gaze, and there aspire."

For interesting matter on the value of the classics in education, the reader is referred to:

1. "Value of the Classics," edited by Dean A. F. West, Princeton, 1917, 1-396.
2. Viscount Bryce: "The Worth of Ancient Literature to the Modern World," Fortnightly Review, April, 1917, 551-556.
3. Livingstone, R. W.: "A Defense of Classical Education," London, 1916, Macmillan Company, 1-278.

DISCUSSION

Dr. W. F. R. Phillips, Charleston, S. C.—I am one of those who, having had some classical training before beginning the study of medicine, did not realize the difficulties that I would have encountered if I had not had that classical training; and later on I became one of those who went over more or less to the utilitarian idea of modern languages in preference to the cultural value of the classics, and was among those who favored the change in the rule, then common, of requiring Latin as a pre-requisite. I was one of those who urged that change when we were adopting, what might be called, our first common specific entrance requirements along about 1903, '04, '05 and later. I favored the utilitarianism of French and German and their substitution for Latin. After the change went through the place of Latin began to be taken by German or French. I did not notice for some years any difference in my students. They seemed to get along as well as previously. But since, in my experience, Latin has become a rare subject of study by the student, I have noticed a decided difference; and I think the reason I did not notice the difference at once was that for quite a while students continued to present Latin, not knowing that it was not an obligatory subject any longer. I am convinced now that the student who has had a classical training is more teachable than the student who has not had it. Modern language does not take the place of the classics and I think Dr. Barker has correctly stated why that is, namely, that in the study of the classics there is more mental exertion required. The student studying modern languages studies to learn to speak them, to use them colloquially, and is satisfied when he has the ability. But in studying the classics we did not expect to speak them, but we did wish to understand them; we wished to read them understandingly and discriminatingly; to get the philosophy of their construction. And so I think this all brings us back to the fundamental principle that what we desire in education is mental discipline, and the best studies for us are the studies that will give the maximum of disciplinary training.

Dr. George Dock, St. Louis, Mo.—At this time many very prominent educators are taking the ground that education should be made as easy as possible, as pleasant as possible, and as practical as possible. The remarks that were made on the previous paper in regard to the two years showed that we still need a rather closer comprehension of what the situation is. The most that Dr. Barker pleaded for, as I understood it, was a two years' college course, and after all the two years' course is practically a technical course, and as the average student goes to the medical school with that, whatever classical education he has depends on lucky chance. There are two features about the student that have not been sufficiently considered. One is in regard to the higher teaching, and Dr. Barker especially spoke of that. Many people have an idea because a man has spent three or four years instead of two years in college that he should have some sort of concession made to him. Men expect to have a year of credit or two years of credit for college work and in some schools, I am sorry to say, authorities are arguing the same way, but they are rather presidents or deans than medical teachers. However, a man who has spent four years in college instead of two should not think at all of cutting down his technical course. He should realize, he should know in fact, that after his course is finished he will more than make up for the time that he spent on any serious subject that he followed. We speak of it as a great hardship that a man should be kept up to twenty-six years of age studying medicine, and it is a greater hardship because with better preliminary training, a man could get through at twenty-five or earlier, but after all twenty-six is not all of life. Many people seem to think that they are to get all their education up to the time they graduate in medicine. Anything like carrying on that education after that seems to be out of the question. I think that that is a very serious mistake, and a medical man has to learn far more after he graduates than he did in his four or six years in medical school, and if he has the right sort of mental equipment it will be much easier for him to take advantage of the future than it would otherwise be.

Dr. Stewart R. Roberts, Atlanta, Ga.—Professor John Dewey, now of Columbia University, says that the value of the teacher in the school room is directly proportionate to the extent of his experience outside the school room. It seems certain that none of us would desire to lessen the training or equipment of any teacher, and likewise we should hesitate to lessen the training or equipment of any student. For the study of medicine the better the training, the larger the experience, the better the teacher, other things being equal. The more the previous educational training even to the A.B. degree, the better the student will be, and the more he will get out of his medical education, and the better physician he will be as a result. The sum of the whole matter is that the elevation of medical education is the salvation of medicine.

Dr. Barker (closing).—As to the length of time after a change made in education before its effects can well be judged, I think it always takes several years, as Dr. Phillips has said. It has often been said it requires twenty years to

test it fully. I must say that I am actually shocked at the kind of English that some of our medical students, even those who have an A.B. degree, are capable of using. Something must be done to better conditions. I am sure that all of you who are teachers must have observed the lack of thorough mental training that is so manifest. We must ferret out the causes of the deficiency and correct them. Personally, I am always glad when a man can have four years of college work before entering medical school. I do not say that the time has come when we should require that of every medical student, but I am glad when a man can have the full college course before entering medicine, and if my boy wanted to go to a medical school I should advise him to take the four years in college before entering upon medical studies. If I had to, I should try to borrow the money, even, in order that he should not be deprived of the great advantages that the college course would give him.

Dr. Roberts and Dr. Dock emphasized what it means to the physician to have the background of a liberal education. Merely technical education is insufficient for the highest work in medicine. The man as developed by general education behind the technical education counts fully as much as the technical education itself. The personality of a man who has wide interests, who knows about the world, and who has traveled in it, can go far toward helping men and women who are sick. To attain success in dealing with cultured and educated patients, the physician needs the kind of personality that will bring conviction, that will inspire confidence, and that will insure sympathy. That can only be developed fully, even with great natural endowment, through an extensive liberal education. Then, aside from that, aside from the fact that we have our patients to think of, I think the personal pleasures that come to the physician from such an education are not to be despised. As we pass middle life, especially, and through organization are able to throw some of the details of our work upon younger shoulders, there is great refreshment to be obtained by going back to some of the subjects we studied in our college days. I know a distinguished neurologist in New York whose hobby is translating Latin and Greek into English. He thinks this pastime much more fascinating than chess. As practitioners we have to make a living, but we also need to make that living as worth while as possible to ourselves and others after we have earned it.

I believe that many students could graduate with four years of college work at the time they finish the second year of college now. For they could be very much better taught than they are now. The chief improvement is, I think, to be made in the high schools, or preparatory schools; though, to a certain extent, time could be saved in the colleges themselves.

THE SENIOR STUDENT*

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In the issue of the *Journal of the American Medical Association* of February 3, 1917, there appeared an article entitled, "Teaching Internal Medicine: Each Student a Teacher." Briefly the plan was a round table idea for didactic teaching. Each student was given a subject which he studied, handed in as a medical paper, presented the subject orally to the class, and remained the authority on that subject for the year in the class. The sum total of these subjects constituted the outline for the course and the papers with their discussions the course itself. By this method responsibility was thrown upon the student; his ability to think, write, and express himself developed with the gain of his voluntary interest and enthusiasm.

This system has been extended to the clinical work with the idea of increasing the responsibility of the student, to the end that he might be teacher as well as learner, in order that his powers of observation, expression, reason, diagnosis, and judgment might be more surely developed. In Emory University the senior clinical work in the Department of Medicine consists of: (1) clinical clerk service, 10 to 12 daily; (2) ward teaching, 2 to 4 daily; (3) medical clinic, one hour, twice weekly. In the clinical clerk service the work consists of history-taking, physical and laboratory examinations. In the ward work a distinction is made between ward rounds, which are primarily for the benefit of the patient; and ward teaching, which is primarily for the benefit of the student. An intensive study is made of one or two diseases each period rather than a few minutes given to each of many patients. We have so many diseases in our clinical repertoire, and each new disease that the student learns is but

*Read in Conference on Medical Education, Southern Medical Association, Eleventh Annual Meeting, Memphis, Tenn., Nov. 12-15, 1917.

an addition to his repertoire. It is well for the student to understand the full sweep of the noun "disease," and the phrase "clinical entity." In this way each new disease is a great new thing, a new whole, slightly variable, and perhaps composite, but as scientifically definite as Sydenham said it was. It is for the student to recognize, grasp, and remember the *simile in multis* of each disease.

A patient is reclining on pillows. The section is standing around the bed. Each student is asked what he sees in the patient, and he must note something not previously mentioned by any other man in the section. Each man misses something in every case. This is an interesting fact. Does a physician miss something in every case? Two men examine the heart and two the lungs; or two the chest and two the abdomen. The rivalry of pair work is good, and then it affords opportunity for discussion and the students draw each other out in evidence and proof. In ten minutes the heart men report their findings. They differ. The two other students examine the heart. Finally the errors of omission and commission are discussed, correct diagnosis approved, and a conclusion reached. A doubting Thomas is nearly always present in each section; he asks questions, and acts as a Socratic irritant as well as stimulant. The students answer his questions, if possible; if not, the teacher is appealed to. The case was one of aortic regurgitation with a relative mitral regurgitation. The capillary pulse, the throbbing vessels, the pressure, the Corrigan pulse came in for their attention. To one student was assigned to present at the next ward period a paper on "The Corrigan Pulse with Remarks on Corrigan."

The two men on the lungs reported next; passive congestion, the lungs and heart disease, rales—always easy for the professor, never for the student. Questions and answers come faster now. The section is veritably on its intellectual toes; it is learning with interest and enthusiasm. One hour gone and neither teacher, student, nor patient exhausted. A student makes a summary of the patient's pathology. The teacher never does anything that he can get the student to do. Another disease has been added to the clinical repertoire of the student. Cases of the same disease are compared. This accents the variations of the same disease in different patients. At another time every tongue in the ward is examined, and it is rare to find any two alike. At another period every radial and temporal artery is palpated; at another, the blood pressure is taken on every patient. Clinical comparisons are not odious, but are striking and impressive.

At the next meeting, the paper on the Corrigan pulse is read and discussed, or summarized. A very profitable method is to pass the paper prepared by one student to another for reading and written comment. It is then passed on until in a week all the men in a section read it, and add the written comment to it. If a paper is well done and important, it may be summarized before the whole class at the medical clinic. New questions are continually arising, for medicine is as broad and restless as the ocean. Questions and comments foreign to the teaching purpose are kindly turned to silence. Many things can not be answered. Absolute honesty is fundamental. Accuracy, thoroughness, and honesty are the triple graces of medicine. A condition in a patient either is or is not. There is no always or never in medicine. Each student must give his opinion so clearly that the others are satisfied as to his meaning. He must distinguish between essentials and non-essentials. His opinion is one thing, but the diagnosis may be quite another thing. Opinion and diagnosis must coincide. However, the opinion of the student is respected and he is taught to respect his own judgment, not to worship it. The student understands that his teacher always silently says, "I like to hear you say what you think," as Socrates told the boy in Meno. In this spirit the work proceeds. It really ceases to be work; it is life and pleasure.

At the medical clinic the section really holds the clinic. To each is assigned a duty in presenting the patient, and each member of the class has the right to ask the student in charge any question he desires. Appeals often come thick and fast. Confessions of past misconceptions are

frequent. Symptoms and signs, diagnosis, final impression, judgment and treatment come in for their small attention. The hour is all too short, and the diseases are many. A new disease every hour on the hour is the stimulus for interest and action. These are but a few of the many variations, and the interest increases as the year passes.

The Jew Jesus and the Greek Socrates are the greatest teachers in personality, spirit, and the virtue of their pedagogy that the world has seen. Separating for the moment the one from his religion and the other from his philosophy, illustrations from their methods will more easily permit analysis and summary, and aid us in pioneering into the pedagogy of medicine.

He was alone, only His disciples were with Him, and generally in a low tone he asked, "Whom say the people that I am?" They answered rather quickly, little knowing what the teacher was leading to, "Some say John the Baptist, some Elias, some a prophet." The bad things were not told, if there were any. Again quietly, the first question was but a feeler, "Whom say ye that I am?" The first question involved memory and the answer was but a quotation; the second observation, reason, the confession of a personal impression. He passed from the said to the unsaid, from the known to the unknown, and led them on,—all clear-cut and simple. The students did most of the talking, and for them, much thinking.

It is the "Republic" of Plato, that student who esteemed it a gust of fortune to have been born in the life-time of Socrates, his teacher. Socrates, with many Greeks and no barbarians, is seated in the home of Polymarchus, whose aged father Cephalus with garlanded head sits on a cushioned chair. Cephalus and Socrates are old friends. Socrates begins on the pleasure of conversing with old men, "and this is a question which I should like to ask of you who have arrived at that time which the poets call 'the threshold of old age'—Is life harder toward the end, or what reports do you give of it?" For a page the old man answers with much of wisdom and little of the vocal creaking of the aged. He talks out. He probably has both emphysema and arteriosclerosis. And then in one brief paragraph is summed the Socrates method and the kindly sympathy of true pedagogy in whatever branch of human learning it is applied. Socrates goes on, "I listened in admiration and *wanting to draw him out that he might go on.* Yes, Cephalus, I said; but I rather suspect that people in general are not convinced by you when you speak thus; they think that old age sits lightly upon you, not because of your happy disposition, but because you are rich, and wealth is known to be a great comforter."

What is the explanation, the insinuating intuition of all this? We know that teaching is three-fold—who teaches, what is taught, how taught. Perhaps this is the analysis:

1. These teachers led their students from the known to the unknown, from objective to subjective, from practical to theoretical, from facts of memory and observation to principles and processes of reason.

2. They threw on the student the burden of thinking, deciding, and acting.

3. Conversation was free, the open mind was the rule, and there was a common fellowship of effort.

4. Every method looked toward the cultivation of reason rather than memory, judgment rather than imitation. To this end questions were answered by another question, or asked and not answered, or a principle uttered simply and like a dart, or the whole matter left open.

5. There was unconsciously impressed upon the student the personality, force, and character of the teacher. They were men of experience in life and they brought that experience richly to the teaching circle.

Year by year the students are improving when they reach the clinical years. The fundamental branches are better taught by better trained men. Are those of us who are clinical teachers improving as teachers? Are we keeping pace with progress in medical education? Are we repeating our old lectures year by year, or are we striking out boldly with increasing force of impression from the increasing stores of our experience and knowl-

edge? Our senior students are the processes and functions of the medical future, and they are

"* * * searching hungrily
Each human being for the stuff of life,
The sharp blue flame beneath the smoke,
The authentic cry."

The day of the clinical orator is past. The clinical orators are not all dead, but their functions as teachers of modern medicine are nearly useless. The masterful medical man will forever address bodies of his fellow physicians on medical subjects in which he has specialized beyond the common run, but the senior student gathers in little groups, in small classes, and learns in conversational tones the great facts and principles of clinical medicine. The patient after all is the master teacher. Which is greater in the kingdom of Heaven, and the answer was a spiritual clinic, and a little child was the patient. In our clinics, the patient with his complaint, his symptoms and signs and pathology, constitutes the great source of our learning. He will always be scientifically infectious to medical men.

By fate or an unfortunate conjunction of circumstances I have never seen this man Osler. I have studied his methods from his students. He looked at a patient with a distended abdomen. What four things cause it? The four Fs—fat, fetus, fluid, flatulence. The question raised, the answer in part, but impressed forever and all so simple. He was transforming the senior student into the mature student. The students say there are but few teachers. They may be born rarely; I do not know. How many in my student days, how many in yours?

We teach many things. How many do we impress? Garrison studying pellagra accumulated thousands of facts. Which of them mean anything. He exclaimed, "God bless the man who knows a fact when he sees it." Do our students recognize the great facts as we develop them? Laboratory, radiograph, instruments of precision, tests, and signs; and are our students improving in clinical judgment? All these lesser things are but means to the larger end. Articles and books come in ceaseless succession, bewildering even to the veterans. How many leave us wiser, how many clear our scientific vision? And yet we would starve medically without them.

The pedagogy of medicine is new ground. It needs clearing and ploughing and planting to the end that the race of men may be even better served by the higher training of those who call themselves "physicians." And though I have the gift of diagnosis, and understand all symptoms and all physical signs, and though I have all apparatus so that I could remove all doubt, and have not clinical judgment,—I am nothing.

DISCUSSION

Dr. Lewellys F. Barker, Baltimore, Md.—Personally, I am quite in accord with Dr. Roberts when he says it is desirable to make the student do everything that is possible by himself. That is one of the teacher's functions, to make the student teach, for by teaching the student learns. I was especially glad to hear the part of Dr. Roberts' paper in which he spoke of "clinical judgment." We as teachers do not often pay enough attention to the development of the later stages of the diagnostic art. The student is taught how to take an anamnesis, how to make a physical examination, and how to make various laboratory tests, and it is very natural for him to think he can make a diagnosis. But these are only the data for defining more clearly and localizing more accurately the diagnostic problem. It is necessary to arrange and to co-ordinate the accumulated data to form hypotheses to explain them, to consider carefully the implications of each hypothesis formed, and to see in how far the hypothesis as developed by reasoning is supported or refuted by the data accumulated. Further observation or experiment may often be required in testing the hypothesis that seems to solve the diagnostic problem. I think that we as teachers do not often enough point out that the mere accumulation of data, of physical signs, of laboratory tests, of x-ray findings, of specialists' reports and so on, are only the early steps toward diagnosis. Many patients present a series of pathological processes rather than a single one, and the diagnostician has to decide, first, what the several abnormal processes are that are going on in the body; and, secondly, what the relative importance of these several processes is. Besides this study of the pathological physiology in the patient, an attempt should be made to define the anatomical basis of the disturbances; and, finally, if possible, to determine the etiology and the pathogenesis. Until all this has been done, and the results recorded, a complete diagnosis has not been made. It is our duty to make a "certainty diagnosis" where we can, and to follow that up with a "probability diagnosis" where we must. Sometimes we can not go further than the making of a "probability diagnosis." I think every physician will feel that this is true.

Dr. M. L. Graves, Galveston, Tex.—Dr. Roberts' plan of teaching the student, it seems to me, has a number of excellent ideas which, properly put into practice, would certainly be helpful to the student, but I must dissent from the idea that a physician can turn a clinic over to his class without direction of studies, clinical histories, or definite physical examinations. I do not even feel that the day of the clinical orator is past. I do not think the history of the world will ever develop a time when the orator, the real orator, the man who is capable of inspiring his class, is lost in any profession. I recognize that the time has past when a man can get up before a class and give it a lot of eloquent generalities. I think his day is past, and happily, but the time when a man can stand before his students and teach them some of the known facts of medical science in the clinic is not past, and in my judgment will never pass. The ward conferences that Dr. Roberts has made so useful in his own work will never do more than supplement the work of the master clinician.

Dr. George Dock, St. Louis, Mo.—I was very much impressed with Dr. Roberts' plan last year when in Atlanta. He showed me what he was doing and I could see for myself just how well this matter worked, and I know Dr. Roberts will understand, from his experience as a teacher, why I have not done exactly the same thing myself. The reason is that I have long been carrying out the Socratic method, but in a different way. I have always been interested in the things that the students do not read from textbooks and periodical literature, and I have always tried to get students to read, and during the last couple of years, and especially this year, I have had them reading particularly war literature. We do a great many of the things that Dr. Roberts spoke of in the class, except we do not ask the student to teach. He is an informal teacher all the time, but we have assigned all the important topics in war medicine to members of the clinical students, and they are expected to keep up with it week by week and be prepared to give an informal talk of about fifteen minutes, on short notice, at various times to the rest of the class. All these men are going into the Army and what they are reading about and hearing about of the conditions that they will be up against over there, they not only get the technical part of it, but they are getting a vital picture of life in military service from the medical point of view. I might recommend that method to those who have not yet tried it as a very good way of stimulating interest in periodical literature, and at the same time carrying out a lot of instruction that one can hardly cover in class hours.

Dr. Roberts (closing).—I probably did not make myself so clear as I should in my refernce to the "clinical orator." I made no reference whatever to my own part in holding these clinics. I have found this out, however, that it is one thing for a speaker of science and equipment to address a group of men who are already doctors, but it is quite another thing for that same finished speaker to address a class of fourth-year students; and sometimes the smoother the lecturer, the less benefit the student receives from the course. The man who just lectures to his students will not accomplish very much. I remember asking a graduate of one of our best schools what he got out of his senior work and he answered: "Well, I don't know." I asked him who he thought his best teachers were, and he mentioned two or three. In reference to the teaching methods of Dr. Osler, this same graduate said that he did not remember everything that Dr. Osler told him, but that he did remember everything that Dr. Osler told him *to look up*, and particularly those things that he *looked up* and *reported* to him. A clinic is something more than opportunity to give vent to one's opinions. In the clinical methods that I have outlined I often take time to outline briefly a point, to emphasize an important matter, and to assist the student to distinguish between the essentials and the non-essentials. If the student is on the wrong track, it is promptly shown him. And this method of throwing the burden upon the student seems to reach his understanding better and to leave him better off medically.

Southern Medical Journal
JOURNAL OF THE
SOUTHERN MEDICAL ASSOCIATION
Incorporating Gulf States Journal of Medicine and Surgery and Mobile Medical and Surgical Journal

Published monthly. Price $3.00 per year; 25 cents the single copy.
Address Southern Medical Journal, Empire Building, Birmingham, Alabama
Entered at the Birmingham, Ala., postoffice as second-class matter under Act of Congress, March 3, 1879

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VOL. XI MAY, 1918 No. 5

EDITORIAL DEPARTMENT

SURGEON-GENERAL GORGAS IS SIXTY-THREE YEARS YOUNG

The *Washington Post* on May 7 is responsible for the statement that Surgeon-General Gorgas will reach the retiring age of sixty-four on October 3, 1918. Of course this does not mean that General Gorgas will be retired in October, because no one would consider retiring a man who every day is demonstrating his youth and efficiency in a position of such great responsibility as that of Surgeon-General of the United States Army during the greatest war in history.

Those who are in a position to know, regard General Gorgas as second in efficiency only to President Wilson; and they marvel at the work he has accomplished in the past year. Only a young man in vigorous health could have lived through what the General has done since the War began. Office hours begin in his office at 9 o'clock, but General Gorgas is there by 8 or 8:30, and he is one of the last to leave in the afternoon. He walks to and from his work, more than a mile, every day, and he climbs up and down the seven flights of stairs in the Mills Building several times a day, because he likes the exercise and sometimes can not wait for an elevator.

Years ago General Gorgas demonstrated that the white man can live, thrive and accomplish as much in the tropics as in colder climates, if malaria and other tropical diseases have been eradicated. Now some are believing that he discovered somewhere on the Isthmus of Panama the fountain of youth that Ponce de Leon sought in vain in the sixteenth century. At any rate, it is believed in Washington, too, that the two best places of residence in the world for developing youth and efficiency are Princeton and Panama.

It is just possible that there exists in Jersey and Panama a variety of mosquito that transmits to those whom it bites the germs of youth and efficiency. This theory, however, does not seem tenable, because the French were bitten by mosquitoes in Panama and died by the thousands, and some are said to have been bitten by the Jersey mosquitoes, and all the inhabitants of New Jersey can not be considered presidential timber.

President Wilson is somewhat younger in years than General Gorgas, and since he has one of the best doctors in the country to see him every day, to keep him well, he may be expected to continue his wonderful degree of efficiency for many years. General Gorgas is his own doctor and he is engaged in the small undertaking of keeping a million and a half boys and young men from catching measles, pneumonia and some diseases that do not affect the respiratory organs, that afflict those who have not learned how to take care of themselves,—and he is doing both jobs better than any man before him ever did. If one knows of the regular life and simple and abstemious habits of General Gorgas he can understand how at sixty-three years he is younger than many men at forty. If all the soldiers lived the hy-

gienic life that he follows, the Army sickness and death rate would be negligible, though it should not be forgotten that the morbidity and mortality rates among our troops are less than half those in the Spanish-American War, and are lower than those of any other army that was ever gotten together.

Of course no one has considered it possible for General Gorgas to be retired during this War. Millions of mothers and fathers and other relatives and friends of our soldiers thank God every day that General Gorgas is directing the army of doctors who are fighting diseases that are as dangerous and that are as insidious enemies to mankind as the Huns. They feel comforted every day on realizing that Gorgas is safeguarding the health and lives of their boys.

Aside from the fact that there is no one who could so ably take the place of General Gorgas as Surgeon-General, the United States and the world owe him such a debt of gratitude that he could not be retired until his labors during the present War have been completed. His conquests over disease have been more brilliant and epoch-making than those of any general who has fought battles against man. Gorgas has brought health and happiness to millions, while wars against man have made countless thousands mourn.

The Gorgas in the Surgeon-General's office at Washington today is the same quiet, smiling, genial man who eradicated yellow fever from Havana for the first time in centuries. He is the same efficient genius in organization, whose achievement in the sanitation of the Canal Zone, President Taft said, "made possible the completion of the greatest industrial undertaking in the history of the world." He is the same Gorgas, but with greater experience, whom the British Government sent for to go to South Africa to study conditions and advise methods for preventing pneumonia that was killing thousands of miners in the Rand and in Rhodesia. All these tasks which he accomplished prepared him for the great work in which he is now engaged; and history does not record anything more remarkable than the training, in less than a year, of the great army of doctors, nurses and hospital attendants who now protect and care for our sick and wounded soldiers in this country and France.

The wisest, the most considerate man in the world appoints the next Surgeon-General of the United States Army; and since President Wilson holds justice and efficiency in such high esteem, there can be no doubt of the reappointment of Surgeon-General Gorgas when his term expires, or when he comes to the age of retirement. If the President has not the legal right to appoint a retired officer as Surgeon-General, Congress will enact a law giving him that privilege. Our country and the world need General Gorgas too much for his retirement to be considered until we and our Allies have conquered the Huns.

WHY NOT I?

The long-heralded German offensive in Flanders, which began March 21st and which was easily the most pretentious military operation ever undertaken, has been checked, at least temporarily, by a decidedly inferior number of British and French. The Allies were outnumbered three and four to one all along the line, and in some places eight to one. It would be impossible to do justice to the valor of the gallant British and French who fought "back-to-the-wall," so to speak. And in the foremost of the battle-line were doctors, some of whom were U. S. Reserve Corps men detailed for British service, caring for the wounded.

News also comes of the very creditable

behavior of the Americans on the sector held elsewhere by them. Their activities have been limited, but their splendid spirit has been demonstrated sufficiently to assure this country that its representatives will be true to her best traditions of bravery.

While all these dispatches pour in, and new editions of the papers are eagerly devoured before the ink is well dried, these questions arise deep down inside our own consciences: "What is my duty in this unheard-of crisis which threatens civilization itself? What is the best course for me to pursue in order to render the greatest service to my country, all selfish interests having been banished to the background?"

Is there a physician in this country, no matter what his age or condition may be, who has not, or who will not, have to decide this question in his own mind? Certainly not, if we know American manhood.

The Medical Corps of the Army has just issued an urgent call for 5,000 additional Reserve Corps men, about half of whom are required for immediate service and the rest as need arises. Furthermore, the Navy also asks for medical offers.

Before turning a deaf ear to this appeal, let every man up to fifty-five years of age ask himself these questions: First, "Am I indispensable to my community?" Not, "Am I the most proficient, available man for this work," but "Can the community possibly do without me?" In 999 out of every 1000 instances the honest answer will be "Yes."

Secondly, "Will my health permit of the duties of a medical officer?" Let the examiner at the recruiting office decide that question.

Thirdly, "Can my family be comfortable during my absence?" To this each may well answer "Yes." (They certainly will not be comfortable if the Germans reach them.) The departure of the breadwinner may mean that households which have hitherto been accustomed to spend $500 and upward a month will have to dispense with many of the luxuries of life, but the necessities, food and clothing, can be provided even on a lieutenant's pay, if persons inspired by patriotism will economize. The highest type of patriotism always involves sacrifice.

The fourth question which one might ask one's self arises purely from a selfish consideration, namely, "Will my practice suffer by this venture?" It is too mercenary a question to be considered when the country's need is at stake. However, it might not be amiss to state that many a man who has hitherto found it impossible to arrange to specialize in his favorite subject, is assigned to a school where he is given an intensive training in that line. Later, he will be given an opportunity to put that knowledge into practice on a large scale in the various camps, hospitals, etc. Consequently, many a physician after the war will be a well-trained expert, thoroughly capable of practicing as a specialist in his branch in some large center of population. This is mentioned not as a bait, but to show that the rewards of military medicine and surgery are not *nihil* but many during war-times, as contrasted with the perhaps less inviting field during periods of peace.

Fifthly, "What commission will I receive if I sign up?" That is heard on all sides. Don't be deterred by the thought that you won't be appreciated or that your less prosperous colleague has a higher rank than is offered you. Your competition in the Army is with the same doctors who were in civil life but a few months ago. If you have made good at home you should be able to do so in the Army. The primary object in going into the Army should not be for gain anyway, but for rendering service where service is needed as it has never been required of you before.

The statement is only too often heard, "I'll go when they need me, but I don't want to go till then." That may sound very well to the uninitiated and to the loyal patients of a physician, but the cold facts, which are as well known to such doctors as they are to you and me, are that so far we have had no class conscription, and that it is hardly likely that any one doctor will receive a personal letter saying that his particular services are needed. Yet this is one of the most effective cloaks behind which some of our stay-at-homes hide. How can such a man imply that he is not needed when the Government is exerting great effort to raise 5,000 more physicians at this very moment? It's again a case of "let George do it."

A word also to members of the "cold-feet brigade" who have applied for, and have received, commissions, but who calmly sit back and neither accept nor reject them. Whatever the true reason may be for such a course, others are most naturally led to the conclusion that this lack of action arises from one of two selfish motives,—either because the rank offered is too low to be tempting, or because the personal sacrifice is considered too great. If unfortunately you have been grouped in this class, pray show the injustice of it by taking some definite action with regard to your proffered commission, not losing sight of the fact that your country needs you, whereas the chances are greatly in favor of your patients' being able to get along quite well without you for a while.

The Official Bulletin for April 2, 1918, gives a list of the states with their rank as regards the percentage of their physicians who have been recommended for commissions in the Medical Reserve Corps. We have selected the states lying within our territory and arranged them in the order in which they stand:

Maryland	5th
Florida	11th
North Carolina	14th
Kentucky	17th
District of Columbia	18th
Virginia	31st
South Carolina	33rd
Tennessee	34th
Texas	35th
Mississippi	37th
Georgia	38th
Alabama	40th
Oklahoma	45th
Arkansas	49th

We regret exceedingly that the South has not responded in larger numbers. However, it is not too late even now. It is interesting to note that the first three states in the Union are Western states,—Nevada, Arizona and Montana. We would like to see the South respond to this call with so many volunteers that the first sixteen places on the roll would be occupied by the states embracing this territory.

It is not our intention to claim that every physician under fifty-five should join the Reserve Corps. There are some, though woefully few, exceptions. For instance, we know of an entire county in one of our Southern states which is now without any physician whatsoever, due to the fact that they have all gone into the Army.

If you are not a Reserve Corps man and are eligible, ask yourself this question in all frankness, *"Why not I?"*

THE WAR-TIME MEASURE OF MEDICAL SCHOOLS

The subject of medical education has assumed a prominent position in adjusting the ways and means of meeting the extraordinary demands made upon the rank and file of the profession by the unheralded war-time conditions. It is interesting to note that in the first considerations of this very important discussion the various colleges offered programs whereby the student could enter school under less stringent requirements or decided upon the plan of transferring the purely academic branches, such as chem-

istry in all its phases save the physiological type, physics, biology and other premedical studies to the high school or college. But it was not until the Association of American Medical Colleges convened in Chicago during February that an acceptable and rational solution was evolved. The three-year medical course was developed without destroying the integrity of the curriculum.

Let us assume that war or post-bellum conditions will continue to make a great demand upon the physicians of the country for the next three years. Within this interval under the new plan an entire graduating class will be prepared to enter the medical field; for having put in three months during the summer for three years, a complete session of nine months will have been gained, thus reducing the course of study from four partial to three calendar years.

How is this to be accomplished? It has been suggested that during July, August and September the first year students complete the regular course in organic and physiological chemistry and bacteriology; that the second year students complete physiological and topographical anatomy studies; and that the third and fourth year classes will take a course in accordance with the schedule of the regular session, giving the seniors during the summer and fall quarters as much of the didactic work as possible. It is clear from the foregoing that class work will dovetail into class work and the medical schools run the risk of experiencing a shortage in the supply of entering freshmen because of the difference in the college year and proposed medical year. However, spurred on by a desire to serve the country in the fullest capacity as guardians of this source of national defense, the medical schools have anticipated every annoying element and will doubtless meet each in a successful manner.

We have noticed the announcements of the Fort Worth Medical School and the Medical Department of Vanderbilt University that the above program has been adopted and will be put into operation this summer. It is hoped that other colleges throughout the South, and elsewhere for that matter, will pursue a similar course even at a sacrifice, if it could be called such.

SEX AND LEX

Philosophers and scientists tell us that next to the desire to preserve one's own life comes the sexual instinct. At all events it certainly exerts one of the most profound influences upon human life.

And so all down through the centuries of the past, mankind has had to combat this passion. The male in general has always begun early, long before physical maturity, to gratify his desires, regardless of the advice and admonitions of his seniors. But a considerable proportion of the females, certainly during the past few hundred years of civilization, have elected to remain chaste 'till matrimony, despite the overtures and customs of their male associates. Thus side by side the two sexes have existed, the one in the main unhampered by sex restrictions, and the other as a rule suppressing, at least outwardly, all *libido sexualis*. In other words, we have had the so-called "double standard."

The injustice of a dual system of morality has long appealed to certain persons as being obviously unfair, and consequently there have arisen from time to time purity leagues, social hygiene associations, and the like, all for the purpose of creating cleaner living among the sexes. Their weapons have been twofold: first, education, and secondly, legislation. They have held meetings and delivered lectures; instituted investigations of segregated districts, commonly known as the

"red light" (in some instances abolishing these); have been instrumental in raising the "age of consent" when absurdly low; have worked for the passage of such laws as the Mann Act prohibiting the transportation from one state to another of a woman for illicit sexual purposes; the compulsory reporting of venereal diseases; and the establishment of venereal dispensaries, etc.

All of these have unquestionably hampered prostitution, thereby forcibly elevating society. But merely because these efforts have not resulted in the entire elimination of illegal sexual intercourse, innumerable critics have arisen to question the justice and wisdom of the efforts in that direction on the grounds that "we can not change human nature." At the same time it should not be forgotten that murder has long been prohibited by law, although no one for a moment would ever think that it could be totally abolished. Furthermore, we should not lose sight of the fact that there has never been a committee appointed to investigate prostitution which has not voted unanimously in favor of its suppression as far as possible by law. Surely to tolerate a thing is to sanction it.

The Government, realizing that a large proportion of the Army and Navy would be incapacitated by reason of veneral diseases were no restrictions placed upon sexual indulgence among the men, has done and is doing everything within its power to keep the men "clean"; and with that end in view has exercised a jurisdiction over a five-mile zone surrounding the posts, camps, and cantonments. A soldier who exposes himself to venereal infection is required to submit to prophylactic treatment. If he then contract an infection in spite of the attempts of the Medical Corps to prevent it, no punishment is meted out to him. But if he fail to present himself after an exposure and then contract a veneral disease, he is punished.

A very well-gotten-up film scenario called "Fit to Fight" has been produced under the authority of the War and Medical Departments, illustrating with actual pictures the ills of venereal diseases. It is planned to have this shown at all the camps both here and abroad as a lesson to the soldiers.

Some states, such as California, have splendid laws making gonorrhea and syphilis reportable diseases. Provision is made for their diagnosis by the state's laboratory; the treatment of lues with Salvarsan and its substitutes at the dispensaries established for that purpose; the treatment of gonorrhea; and the legislation against infected persons attending school.

Now quite a number of states have laws on the subject of venereal diseases, the most effective being those of California, Illinois, Iowa, Kansas, Maine, New Jersey, New York, Vermont and Wisconsin.

The Southern states having statutes bearing upon the question are Florida, Kentucky, Louisiana, North Carolina, and South Carolina. Most of these, we regret to say, are wholly inadequate. The best in the South are probably those of North Carolina. The rest should fall in line and frame laws to combat this most distressing evil, a disturbing factor with which doubtless we shall always have to fight, but which it is most imperative that we fight.

Book Reviews

American Illustrated Medical Dictionary. A new and complete Dictionary of terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology, and kindred branches; with new and elaborate tables. Ninth Edition Revised and Enlarged. Edited by W. A. Newman Dorland, M.D. Large octavo of 1179 pages with 331 illustrations, 119 in colors. Containing over 2,000 new terms. Philadelphia and London: W. B. Saunders Co., 1917. Flexible Leather, $5.00 net; thumb index, $5.50 net.

The reviewer is most favorably impressed by this new Dorland. It is still a convenient size; is bound in limp leather; the type and paper are well-selected; capitalized words are indicated; in the front there is a special index of all the tables given; and there are many new words defined. It is a dependable authority.

Medical War Manual No. 3. Authorized by the Secretary of War and under the Supervision of the Surgeon-General and the Council of National Defense.

Military Ophthalmic Surgery. Allen Greenwood, M.D., Major, M.R.C., U.S.A. Recently Honorary Lieut.-Colonel, Harvard Surgical Unit with the Royal Army Medical Corps, British Expeditionary Force, including a chapter on Trachoma and other Contagious Conjunctival Diseases, and G. E. deSchweintz, M.D., Major, M.R.C., U.S.A., with a chapter on Ocular Malingering by Walter R. Parker, M.D., Major, M.R.C., U.S.A. Illustrated. Philadelphia and New York: Lea & Febiger, 1917. Cloth, $1.50.

This little handbook contains many suggestions and much practical information especially valuable to medical officers and to members of examining boards. Major Greenwood's contribution on wounds of the eye and its appendages, with explicit directions as to prophylaxis and the value of early repair of damaged tissues, while not a complete treatise, contains a wonderful amount of valuable information.

Major deSchwintz's contribution on Trachoma and the common forms of conjunctivitis is a gem, while Major Parker's article on the detection of malingerers will be of inestimable value to Medical Advisory Boards.

OTHER BOOKS RECEIVED

Medical Clinics of North America. John Hopkins Number, July, 1917. The New York Number, November, 1917. Published bi-monthly. Philadelphia and London: W. B. Saunders Co. Price, per year: Paper, $10.00; cloth, $14.00.

Southern Medical News

ALABAMA

Dr. Robert Oleson, U.S.P.H.S., has been appointed to succeed Dr. H. S. White as Sanitarian in charge of the Government work at Camp Sheridan.

Col. J. H. White, of the Surgeon-General's office, was in Birmingham during April, looking into sites for a Reconstruction Hospital that have been offered by the City.

On April 22 the Jefferson County Medical Society was the guest of the Department of Health at an exhibition of the Child Welfare Exhibit which is being conducted in Birmingham.

Dr. J. D. Dowling, Birmingham, City and County Health Officer of Jefferson County, has been elected President of the Association of County and City Health Officers of Alabama. This Association will meet in Birmingham on July 22.

The following officers were elected during the State Association meeting held in Birmingham April 18-19: President, Dr. I. L. Watkins, Montgomery; Vice-President, Dr. H. S. Ward, Birmingham; Secretary, Dr. H. G. Perry, Montgomery; Treasurer, Dr. J. U. Ray, Woodstock; Censors, Glenn Andrews, Montgomery; S. G. Gay, Selma; C. A. Thigpen, Montgomery; R. S. Hill, Montgomery.

ARKANSAS

The Benton County Medical Society held its monthly session at Bentonville on April 12.

Circuit Judge T. C. Trimble, in Faulkner County, has ruled that it is not within the authority to empower any agency to make general and compulsory vaccination a law.

Foulke, Miller County, is threatened with an epidemic of smallpox.

The Conway County Medical Society met at Little Rock recently and elected Dr. A. R. Bradley President and Dr. A. L. Goatcher Secretary.

Health Officer C. W. Garrison states that the smallpox epidemic throughout the State is much improved.

County Health Officer H. H. Niehuss, Eldorado, and the Council of Defense have planned a big campaign for the betterment of sanitary conditions in the county.

The Arkansas State Medical Society will hold its annual convention at Jonesboro May 7-9.

The Williamson County Medical Society met in Georgetown on April 10.

Deaths

Dr. W. H. Taylor, Little Rock, aged 71, died at his home in March.

Dr. A. R. Bowen, Little Rock, aged 69, died at his home April 15.

Dr. L. R. Wright, Batesville, aged 46, died at his home April 9.

FLORIDA

On March 11 the campaign that has been going on to raise funds to build the Good Samaritan Hospital, Palm Beach, came to a close.

A movement to establish a Tuberculosis Hospital for Duval County has been started by the Florida Anti-Tuberculosis Association, and will very likely become an issue at the general election in June.

Dr. O. J. Miller has been appointed by Dr. Cox, State Health Officer, to be Consulting Surgeon of the State Board of Health, Department of Indigent Crippled Children.

Dr. Kate Carpeles, Jacksonville, has received her commission as First Lieutenant in the Army and will be assigned as Acting Assistant Surgeon to the Emergency Dispensary of the Medical Department at Washington, D. C. This makes the first woman physician to receive a commission.

Dr. J. E. Taylor has resigned his position as Assistant State Health Officer and will resume his private practice.

Dr. A. E. Conter has removed to Appalachicola to enter private practice, thus leaving the office of Chief Physician at Chattahoochee vacant. This office will be abolished in the future.

Dr. J. E. Taylor, resigned, has been succeeded as District Health Officer by Dr. L. P. Golphin, Fernandina, who will make headquarters at Tallahassee.

Deaths

Dr. C. C. Hunter, Gainesville, aged 40, died at his home during April.

GEORGIA

The Floyd County Medical Society has assured the Board of the Free Clinic at Rome that the physicians will do all that is possible to co-operate with them in their new work.

The annual convention of the Georgia State Medical Association was held at Savannah during April, at which time the following officers were elected for the ensuing year: President, Dr. J. W. Palmer, Ailey; Vice-Presidents, Dr. George R. White, Savannah, and Dr. L. B. Clark, Atlanta; Secretary-Treasurer, Dr. W. C. Lyle, Augusta.

City Health Officer J. P. Kennedy, Atlanta, has appointed Dr. D. K. Dowd as City Physician to succeed Dr. J. G. Hall, who has enlisted in the M.R.C.

Dr. Asbury Hull, Augusta, has been appointed Acting Assistant Surgeon in the United States Public Health Service.

Dr. W. K. Sharpe, U.S.P.H.S., who has been in Atlanta since last August, has been transferred to Sheffield, Ala., where he assumes charge of public health matters at that point.

Dr. C. H. Richardson, of the Sixth Congressional District, has been appointed a member of the State Board of Health to fill the unexppired term of Dr. H. J. Williams.

Dr. J. E. Paulin has been appointed Professor of Practice of Medicine in Emory University to succeed Dr. Stewart R. Roberts, Major in the Medical Reserve Corps.

(Continued on page 28)

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(Continued from page 406)

The Floyd County Medical Society held its monthly session in Rome April 13.

The Terrell County Medical Association held its meeting at Dawson during April.

Dr. W. T. Price, Augusta, has been appointed to fill the vacancy on Local Board No. 2 caused by the resignation of Dr. Asbury Hull.

Dr. A. H. Cochran, Atlanta, is much improved after a severe illness.

Dr. E. S. Davis has removed from Babcock to Climax.

Dr. W. C. Howard, Pensacola, Fla., has assumed his duties as City Health Officer of Albany.

The members of the Medical Staff of the Atlanta and Fulton County Anti-Tuberculosis Society were recently entertained at a dinner by the officers of the organization.

Deaths

Dr. H. B. Godby, Atlanta, age 86, died at the family residence on April 9.

Dr. Max Morris, Macon, died from pneumonia at his home on April 22.

Dr. V. P. Stevens, Poulan, age 46, died from pneumonia during April.

Dr. J. B. George, Gainesville, died from heart failure at his home during April.

Dr. W. R. Winchester, Macon, died following a stroke of paralysis on April 15.

Dr. Lloyd A. Belt, Millen, died at his home on April 10 from heart trouble.

KENTUCKY

Drs. Henry Enos Tuley, George A. Hendon and David C. Morton, Louisville, were recently named members of the Tuberculosis Corps of Waverly Hill Sanatorium.

Dr. Henry E. LeCates, Lexington, has resigned as Superintendent of the Blue Grass Tuberculosis Sanatorium. He goes to Minnesota, where he will be connected with the State Advisory Tuberculosis Commission.

Dr. Orlan T. Hughes, Stamping Ground, has been named City Physician of Lexington, vice Dr. Alexander C. Brown, deceased.

Dr. C. H. Harris, Louisville, has been appointed to succeed Dr. J. I. Whittenberg as County Health Officer.

The University of Louisville, Medical Department, dedicated its service flag during April. Forty stars are on it now, and more will be added.

Dr. A. V. McRae, Murray, is at the New Orleans Polyclinic School of Medicine, taking a post course on eye, ear and throat.

Dr. N. C. McGraw, of Christian County, has removed to Cadiz.

Dr. W. H. Wheeler, West Liberty, has succeeded Dr. J. V. Rice as physician for the coal company at Wheelright.

Deaths

Dr. T. S. Shouse, Shelbyville, age 50, died at his home April 1 from diabetes.

Dr. Henry Schnuth, Louisville, age 84, died at his home during April.

Dr. G. A. Embry, of Estill County, age 79, died at Irvine during February.

LOUISIANA

Lieut. Theodore Thomas Batson, M.R.C., and Miss Aline Catherine Pinera, R.N., both of New Orleans, were married April 21, 1918.

The American Hay-Fever Prevention Association held a meeting in New Orleans on April 14.

The Association of Parish and Municipal Health Officers met in Shreveport during April to consider improvement in sanitation with health conditions of the State.

Dr. W. H. Robbins, City Health Officer, New Orleans, announces that New Orleans is to have a health inspection and fly campaign in the near future.

Dr. Robert W. Faulk, Monroe, is suffering from a fractured arm due to cranking an automobile.

There is a movement on foot to convert the Alexandria Isolation Hospital into a hospital for venereal diseases.

Dr. F. W. Quin, Assistant Physician at the Louisiana Hospital for the Insane, Pineville, has been appointed

(Continued on page 30)

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(Continued from page 28)

a member of the Medical Advisory Board of District No. 5.

Dr. H. F. Adair, New Orleans, has been appointed by the State Board of Health as head of the newly-created Bureau of Social Diseases.

Dr. H. B. White, Lake Charles, has resigned his position as Medical Inspector of the State Board of Health.

The Louisiana State Medical Society held its annual meeting in New Orleans during April, at which time the following were elected officers: President, Dr. W. H. Knolle, New Orleans; Vice-Presidents, Dr. Amedee Granger and Dr. A. E. Fossier, New Orleans; Dr. Paul T. Talbot, New Orleans, Secretary-Treasurer.

MARYLAND

The 120th annual meeting of the Medical and Chirurgical Faculty of Maryland held a three days' session in Baltimore during April.

Dr. O. F. Gillespie, New Hampton, has removed to Darlington, where he has been appointed to the position of Surgeon by the Burlington Railroad.

Dr. F. J. Flannery, Mt. Hope Retreat Resident Physician, is much improved following a severe auto accident.

The Emergency Fund of the University of Maryland Base Hospital Unit No. 42, has been completed.

There has been for the past few weeks an epidemic of measles in the City of Baltimore.

On account of the national emergency, it has been decided to postpone the meeting of the Medical Library Association which was to have been held in Baltimore until after the war.

During April the South Baltimore General Hospital was formally opened to the public. It will accommodate fifty patients and special arrangements are made for medical and surgical wards. The Surgeon-in-Chief is Dr. Emil Novak and his assistant is Dr. J. G. Onnen.

The City of Baltimore has authorized the Government to take over the quarantine station, and Dr. T. L. Richardson will enter the U.S.P.H.S. when the Government formally takes this step. A congressional appropriation will be made to purchase the buildings, grounds and equipment from the City, and it has been arranged for city patients suffering from contagious diseases to be treated by the Government at $1.00 a day per patient.

On April 18 the State War Times Tuberculosis Conference was held in Baltimore. At the annual meeting of this Conference the Maryland Association for the Prevention and Relief of Tuberculosis elected the following officers: President, Henry B. Jacobs, Baltimore; Secretary, C. Hampton Jones, and Treasurer, Joseph S. Ames. Dr. Martin F. Sloan, Towson, was elected Superintendent of the Eudowood Sanatorium.

Dr. Thomas W. Koon, of Cumberland, has been elected for the third consecutive term and Dr. T. A. K. Hummelshime was elected one of the four commissioners.

Health Commissioner Blake, of Baltimore, has recommended that a Bureau of Child Hygiene be established in the Health Department.

Deaths

Dr. Alexander Von Schulz, Cumberland, age 50, died during April in a hospital at Clarksburg, W. Va., following operation for appendicitis.

Dr. F. N. Henderson, Rockville, Captain in the M.R.C., died from spinal meningitis at Camp Oglethorpe, Ga., during April.

MISSOURI

The forty-ninth annual meeting of the Eclectic Medical Society of Missouri was held in Kansas City during April.

The following physicians have resigned from the General Hospital and the Emergency Hospital of Kansas City: Dr. Abraham Weinberg, Dr. James I. Tyree and Dr. Abraham Sophian.

Dr. George Pipkin, formerly Superintendent of the General Hospital and for a time Health Commissioner of Kansas City, has returned to Kansas City for a recuperation, following illness.

Dr. Felicia Piat has undertaken the organization

(Continued on page 32)

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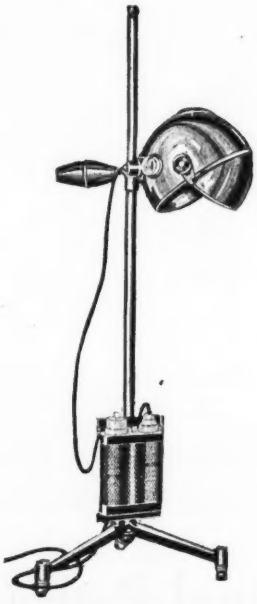

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Chicago

(1918)

(Continued from page 30)

of a Medical Unit for Women with headquarters in Kansas City.

Thomas M. Finn, Kansas City, has been appointed President of the Hospital and Health Board of that City.

The Buchanan County Medical Society held its monthly meeting on April 4 at St. Joseph.

It has been voted by Audrian County to issue bonds to the amount of $75,000.00 for public health work in that County.

Dr. W. R. Summers, formerly Assistant Physician at State Hospital No. 3, Nevada, has assumed control of the Johnson Sanitarium at Springfield.

Dr. W. L. Whittington, until recently Superintendent of the State Hospital at St. Joseph, has been made Assistant Superintendent of the State Home for the Feeble-Minded at Eldridge, Cal.

Dr. W. B. LaForce, St. Joseph, is now in Peking, China, having accepted appointment as Physician-in-Charge of the American Indemnity College. He is also a member of the faculty of the institution.

The following members have been elected by the State Board of Health: President, Dr. W. J. Ferguson, Sedalia; Vice-President, Dr. W. A. Clarke, Jefferson City; Secretary, Dr. George H. Jones, Jefferson City.

The Buchanan County Medical Society held its dedication of its service flag during February.

Dr. T. J. Rigdon, Kennett, has been appointed Coroner of Dunklin County, succeeding Dr. E. F. Harrison, resigned.

Deaths

Dr. Jacob Friedman, St. Louis, age 82, died in a hospital in Chicago during April.

Dr. Herbert Lee, St. Joseph, died at his home during March.

Dr. E. J. Thurman, St. Louis, age 78, died at his home on April 1.

Dr. J. M. Berry, Webster Grove, age 62, died at his home during February.

Dr. A. M. Townsend, Kenoma, died at his home during February.

(Continued on page 34)

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Chicago

(Continued on page 32)

MISSISSIPPI

Dr. F. E. Harrington, U.S.P.H.S., is in charge of the cantonment work at Hattiesburg.

Dr. J. M. Buchanan has been succeeded as Superintendent of the East Mississippi Insane Hospital at Meridian by Dr. M. J. L. Hoye.

Dr. R. M. Butler, Liberty, has resigned as Superintendent of the Mississippi Insane Hospital at Jackson, and has been succeeded by Dr. Charles D. Mitchell, Pontotoc.

Dr. O. H. Swayze has been succeeded as County Health Officer by Dr. W. E. Noblin, Yazoo City.

Arrangements have been made through the State Board of Health for the care of two lepers from Harrison County.

For the purpose of erecting a new hospital at Biloxi, the Legislature will be asked for an appropriation of $25,000.00.

An appropriation of $18,000.00 for improvements has been asked by Dr. Hicks, of the Charity Hospital of Vicksburg.

The Central Medical Society held a meeting in Yazoo City during April.

NORTH CAROLINA

The North Carolina Medical Association held its annual meeting at Pinehurst during April, at which time the following were elected officers for the year: President, Dr. Cyrus Thompson, Ownslow County; Secretary-Treasurer, Dr. B. K. Hayes, of Oxford.

Dr. C. P. Fryer has been appointed by the State Board of Health as all-time Health Officer of Pitt County. Dr. Fryer comes from the State Board of Florida.

The Mechlenburg Medical Society held its monthly meeting in Charlotte during April, at which time the dedication of a service flag with twenty-two stars was held.

Deaths

Dr. Silvo von Ruck, Asheville, aged 44, died in New York, April 7th, from pneumonia. The Winyah Sanatorium will be maintained as formerly, it being under

(Continued on page 36)

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Typhoid Immunization by means of Mixed Typhoid Vaccine containing killed typhoid and Paratyphoid A and B bacilli has practically eliminated typhoid fever from the United States Army and Navy and from the military and naval forces in the present world war.

In health reports from camps and cantonments, typhoid cases are exceedingly rare, and when reported, are usually individuals who by some oversight have evaded immunization.

In the United States over 400,000 persons are incapacitated and over 30,000 die of typhoid fever each year* notwithstanding the fact that the immunizing value of typhoid bacterin and serobacterin is thoroughly established.

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*United States Public Health Bulletin No. 69, May, 1915.

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(Continued from page 34)

the personal supervision of his father, Dr. Karl von Ruck.

Dr. Philip E. Lucas, Burgaw, died at his home during April.

OKLAHOMA

Dr. R. J. Gauldin, Oklahoma City, and Dr. H. J. Hards have resigned from their official capacity with the City.

On March 12, at Oklahoma City, a Tuberculosis Dispensary was opened and placed in charge of the public health nurse.

Dr. J. B. Chastain, Broken Bow, has removed to Davis.

Drs. M. M. DeArmand, Mangum, and General Pinnell, Lawton, have removed to Miami and formed a partnership.

The capacity of the Oklahoma Cottage Sanitarium for the treatment of tuberculosis has been increased to twelve beds.

The State Medical Association will hold its annual meeting at Tulsa May 14-16.

The Health Survey was started in Muscogee during April, under the direction of the State Association for the Prevention of Tuberculosis. The work is in charge of Dr. M. P. Horowitz.

Deaths

Dr. Warren A. Newell, Ocmulgee, died at his home following a prolonged illness on April 9.

SOUTH CAROLINA

The annual session of the South Carolina Medical Association was held at Aiken during April, and at this meeting the following were elected officers: President, Dr. James A. Hayne, Columbia; Vice-Presidents, Dr. E. T. Kelley, Kingstree, Dr. S. M. Pitts, Saluda and Dr. H. T. Hall, Aiken; Secretary-Treasurer, Dr. E. A. Hines, Seneca (re-elected).

At its annual meeting the South Carolina Medical Association adopted regulations relative to the treatment and prevention of venereal diseases.

(Continued on page 37)

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(Continued from page 36)

Dr. Charles E. Lowe, Health Director of Spartanburg, has resigned his office and will become Director of Health of Wilmington, N. C.

Dr. G. C. Godwin, Acting Health Officer of Florence, has resigned to enter the United States Public Health Service.

The Palmetto Medical Association, composed of Negro physicians, dentists and pharmacists, held its annual meeting in Orangeburg April 23-25.

Dr. S. B. Fishburne, City Health Officer of Columbia, has resigned and has gone to New York for a post-graduate course in eye, ear, nose and throat diseases.

Deaths

Dr. E. M. Boykin, Charleston, died from meningitis during April.

TENNESSEE

The Carroll County Medical Association held its regular meeting in McKenzie during April and the following officers were elected for the year: President, E. W. Hillsman, Trezevant; B. C. Dodds, Huntington, Vice-President; Secretary-Treasurer, J. H. Williams, McKenzie.

The annual session of the Tennessee Medical Association was held in Memphis during April.

Dr. William Krauss and Miss Margaret V. Curdy, both of Memphis, were married on April 13.

TEXAS

The faculty of the Medical College of the University of Texas has arranged to run its school through the summer, starting about June 15.

The semi-annual meeting of the South Texas District Medical Association was held in Houston during April.

Dr. M. Dennis, Cleburne, has been appointed City Health Officer of that City.

(Continued on page 38)

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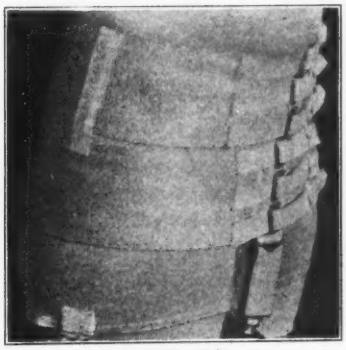

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(Continued from page 37)

The Navarro County Medical Society held its meeting at Corsicana on April 2.

Dr. E. E. Dickason, City Physician of Brownsville, has been commissioned in the Medical Reserve Corps.

Dr. W. J. West, El Paso, has been elected President of the Conway Medical Asscciation.

Dr. H. E. Cowan has moved from Vernon to Houston.

Dr. Rockett has moved from Hewitt to Robinsonville.

Dr. T. C. Hairston has moved from Austin to Brenham.

Dr. W. S. Carter, Dean of the State Medical College, Galveston, has returned from California and Chicago, where he has been looking into the work of the medical schools.

Dr. Tanner has moved from Youngsport to Killeen.

Dr. J. R. Evans has moved from Devine toMcore.

Dr. J. S. Wilkins has moved from Paducah to Hot Springs, Ark.

Deaths

Dr. D. B. Morrow, Dallas, died at his home during April.

Dr. R. H. Hunter, Hubbard, died recently at his home.

Dr. W. E. Russell, Avinger, age 53, died at his home at a late date.

The following deaths have been reported: Dr. Rufus Williamson, Covington; Dr. J. D. Duncan, Temple; Dr. T. J. S. Kimbrough, Weatherford; Dr. R. A. Childers, Floydada; Dr. J. A. Pharr, Waco.

VIRGINIA

The Norfolk County Medical Society has sent forth an urgent appeal to the public asking its co-operation that the strength of the profession might be preserved and adequate services be performed.

Dr. W. T. Graham, of Wythe, will be in charge of the State Orthopedic Hospital to be established at the Medical College of Virginia in Richmond.

Dr. C. E. Harper was re-elected President of the Danville Anti-Tuberculosis League at its regular meeting held in Danville on April 22.

Deaths

Dr. W. M. Eubank, Arrington, died at his home on April 15.

Dr. C. J. Ingersoll, Keswick, after a short illness, died at the Martha Jefferson Hospital during March.

Dr. W. W. Nelson, Richmond, died at his home following a prolonged illness on April 8.

Dr. E. T. Rucker, Richmond, age 65, died following a fall, during April.

WEST VIRGINIA

The Conference of Health Officers of West Virginia was held in Huntington during April.

Dr. Harry P. Campbell has been appointed Prison Physician at Wheeling.

The Marshall County Medical Society met in Wheeling on March 9.

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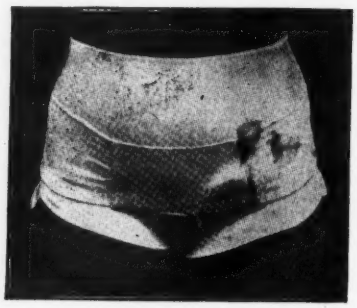

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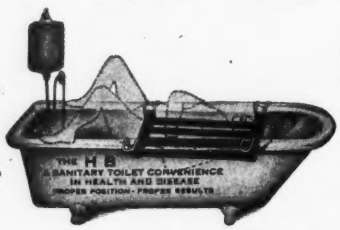

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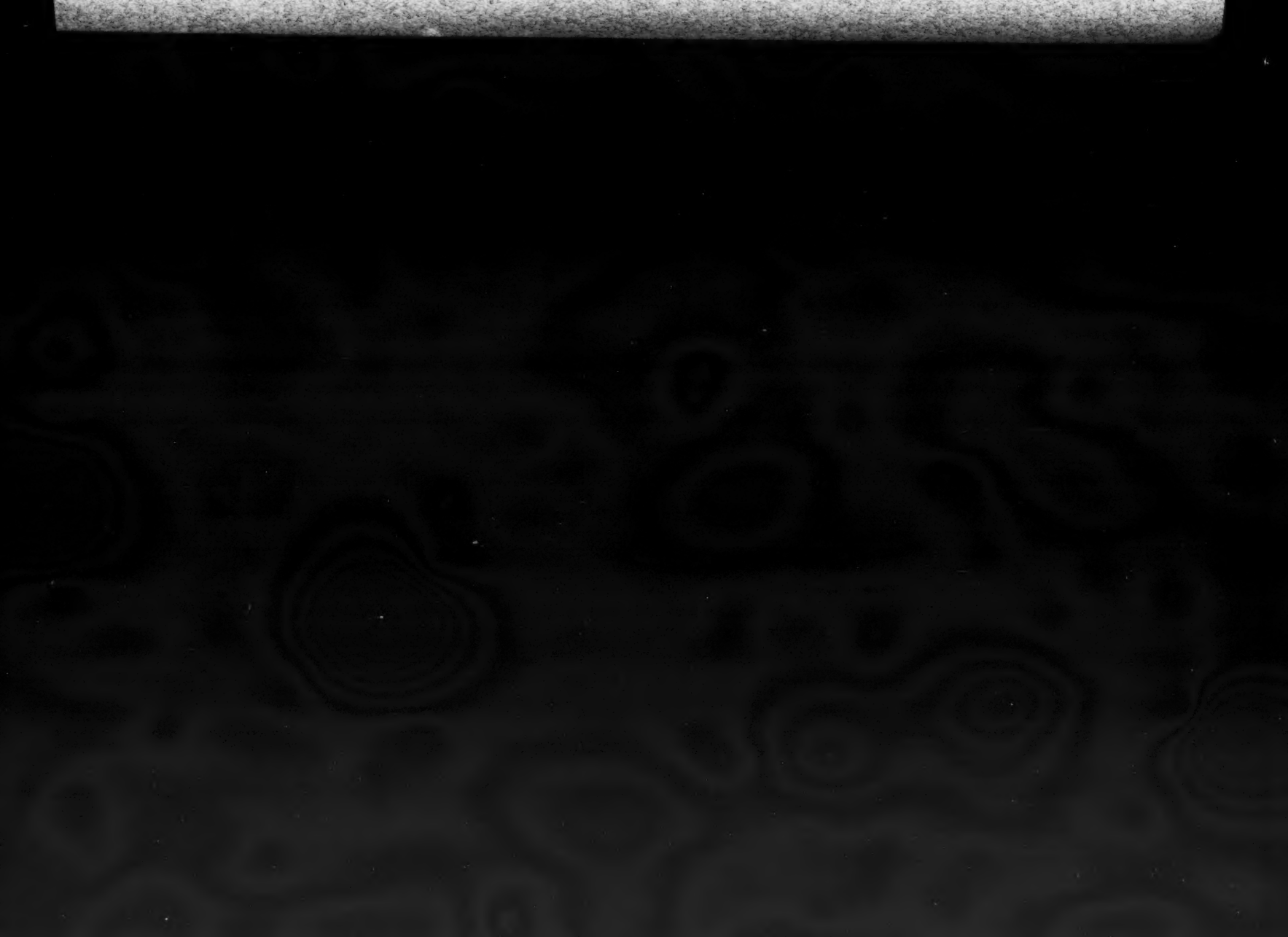

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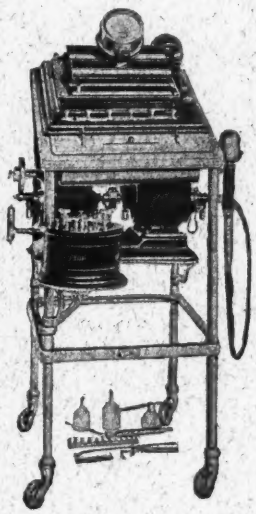

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